



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

August 1, 2017

Mail code: SR-6J

VIA FEDEX

Ajita G. Rajendra, President
A. O. Smith Corporation
11270 West Park Place
Milwaukee, WI 53224

**Re: SPECIAL NOTICE OF LIABILITY for the Sauget Area 2 Site, Operable Unit 1,
Sauget and Cahokia, St. Clair County, Illinois**

Dear Mr. Rajendra:

The United States Environmental Protection Agency (EPA) has information indicating that you may be a Potentially Responsible Party (PRP), liable under Section 107(a) of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9607(a), as amended (CERCLA), with respect to Operable Unit 1 (OU 1) of the Sauget Area 2 Site (the Site) in Sauget and Cahokia, St. Clair County, Illinois. A remedial investigation (RI) and feasibility study (FS) regarding contamination at the Site has been conducted pursuant to CERCLA. After reviewing the RI and FS, EPA signed a Record of Decision (ROD) on December 16, 2013, in which a remedy was selected to clean up the contamination at OU 1 of the Site. A copy of the ROD is enclosed as Enclosure A. By this letter, EPA is notifying you of your potential liability with regard to this matter and encourages you, as a PRP, to voluntarily perform or finance the response actions that EPA has determined to be required at the Site and to reimburse EPA for its costs incurred in responding to releases and/or threatened releases of hazardous substances at the Site.

Special Notice and Negotiation Moratorium

Pursuant to Section 122(e)(1) of CERCLA, EPA has determined that a period of negotiation may facilitate an agreement between the PRPs and EPA for implementation or financing of the necessary response actions. Accordingly, EPA is contacting PRPs identified with the Site to resolve their liability with respect to OU 1. To assist the PRPs in negotiating with EPA concerning this matter, enclosed with this letter is a list of the names and addresses of all the PRPs to whom this notification is being sent. It should be noted that inclusion on or exclusion from this list does not constitute a final determination by EPA concerning the liability of any such party regarding performance of response actions or payment of response costs at the Site.

Upon your receipt of this Special Notice, you will have 60 days to coordinate with other PRPs and present to EPA a "good faith offer" to conduct and/or finance the necessary response actions, and to negotiate the terms of a consent decree. In accordance with the requirements of Section 122(e)(2) of CERCLA, EPA will not commence any response actions at the Site during this 60-day moratorium. EPA may, however, commence any additional studies or investigations authorized under Section 104(b) of CERCLA, and take any action at the Site should a significant threat to human health or the environment arise during the negotiation period. The 60-day negotiation moratorium will be extended for an additional 60 days if EPA determines that the PRPs have provided EPA with a good faith offer to conduct or finance the remedial design and remedial action (RD/RA). If settlement is reached between EPA and the PRPs within the 120-day negotiation moratorium, the settlement will be embodied in a consent decree for Remedial Design/Remedial Action. When approved by EPA and the U.S. Department of Justice ("DOJ"), the consent decree will then be lodged in federal court.

Pursuant to the Superfund Reforms announced on October 2, 1995, when EPA enters into future RD/RA settlements, EPA intends to compensate settlors for a portion of the shares specifically attributable to insolvent and defunct PRPs (orphan share), if any. EPA believes that there may be PRPs at this Site who are insolvent or defunct. If you, either individually or with other PRPs, enter into an RD/RA settlement with EPA and provide sufficient information about the existence, liability, and relative shares of responsibility of insolvent and defunct PRPs, EPA will analyze the information and determine whether to consider the shares of these parties in the amount of EPA's past costs and future oversight costs to recover in such settlement.

Good Faith Offer

A proposed consent decree is enclosed to assist you in developing a "good faith offer."¹ As indicated, the 60-day negotiation moratorium triggered by this letter is extended for 60 days if the PRPs submit a "good faith offer" to EPA. A "good faith offer" to conduct or finance the remedial action is a written proposal that demonstrates your qualifications and willingness to perform such work and includes the following elements:

- A statement of your willingness and financial ability to implement the requirements of the ROD and proposed consent decree and that provides a sufficient basis for further negotiation;
- A demonstration of your technical capability to carry out the remedial action, including identification of the firm(s) that may actually conduct the work or a description of the process that will be undertaken to select the firm(s);

¹ This draft consent decree is not currently binding on EPA and is subject to revision and approval by EPA and DOJ. It is based on the model RD/RA Consent Decree (September 30, 2015), which is available on the Internet at <https://www.epa.gov/sites/production/files/2015-10/documents/prop-require-rdracd-2015-mem.pdf>.

- A statement of your willingness to reimburse EPA for costs EPA will incur in overseeing your implementation of the remedial action;
- A response to the proposed consent decree. If your offer contemplates modifications to the consent decree, please make revisions or edits to the consent decree and submit a version showing your proposed modifications to it;
- A list identifying each party on whose behalf the offer is being made, including name, address, and telephone number of each party;
- The name, address, and phone number of the party who will represent you in negotiations; and
- A redline/strikeout version of the draft CD in Microsoft Word.

If a "good faith offer" is not received within the initial 60-day moratorium, EPA may proceed to immediately undertake such further action as is authorized by law, utilizing public funds available to the Agency, pursuant to Section 122(e)(4) of CERCLA.

Additional Response Actions

If EPA determines that a PRP (or PRPs) will not voluntarily undertake the response actions specified in the ROD to address the release or threatened release at the Site, EPA may, under Section 104 of CERCLA, undertake these response actions and, under Section 107 of CERCLA, seek reimbursement from the PRPs of all costs incurred in connection with the response actions taken. Such costs may include, but are not limited to, expenditures for planning and conducting the necessary response actions and for enforcement activities. Moreover, under Section 106 of CERCLA, EPA may order PRPs to implement relief actions deemed necessary by EPA to protect the public health and welfare, or the environment, from an imminent and substantial endangerment because of an actual or threatened release of a hazardous substance at the Site.

In addition to the response actions described above, EPA may also determine that other cleanup activities are necessary to protect the public health and welfare, and the environment, pursuant to its authorities under CERCLA and other laws.

Demand for Reimbursement of Costs

With this letter, EPA demands that you reimburse EPA for its costs incurred to date, and encourages you to voluntarily negotiate a consent decree in which you and other PRPs agree to perform the RD/RA.

In accordance with Section 104 of CERCLA, 42 U.S.C. § 9604, EPA has taken certain response actions and incurred certain costs in response to conditions at the Site which have not been reimbursed. EPA is seeking to recover from you and other PRPs at the Site its response costs and all the interest authorized to be recovered under Section 107(a) of CERCLA. To date, the

approximate total response costs identified through March 31, 2017 for the Site are \$571,105.53. Under Section 107(a) of CERCLA, EPA hereby makes a demand for payment from you and other PRPs for the above amount plus all interest authorized to be recovered under Section 107(a). A summary of these costs is enclosed as Enclosure B.

Some or all of the costs associated with this notice may be covered by current or past insurance policies issued to you. Most insurance policies will require that you timely notify your carrier(s) of a claim against you. To evaluate whether you should notify your insurance carrier(s) of this demand, you may wish to review current and past policies, beginning with the date of your first contact with the Sauget Area 2 Site, up to the present. Coverage depends on many factors, such as the language of the particular policy and state law.

In the event that you file for protection in a bankruptcy court, you must include EPA as creditor, because EPA has a potential claim against you. EPA reserves the right to file a proof of claim or application for Reimbursement of Administrative Expenses.

PRP Steering Committee

To assist PRPs in negotiating with EPA concerning this matter, EPA is attaching to this letter a list of the names and addresses of other PRPs to whom it is sending this Notice.

EPA recommends that all PRPs meet to select a steering committee responsible for representing the group's interests. EPA recognizes that the allocation of responsibility among PRPs may be difficult. If PRPs are unable to reach consensus among themselves, we encourage the use of the services of a neutral third party to help allocate responsibility. Third parties are available to facilitate negotiations. At the PRPs request, EPA will provide a list of experienced third-party mediators, or help arrange for a mediator.

Administrative Record

In accordance with Section 113 of CERCLA, 42 U.S.C. §9613, EPA has established an Administrative Record containing the documents that serve as the basis for EPA's selection of the appropriate response action for the Site. This Administrative Record is located at Cahokia Public Library, 140 Cahokia Park Drive, Cahokia, Illinois and is available to the public for inspection and comment. The Administrative Record is available for inspection and comment at the Superfund Records Center, EPA Region 5, 77 West Jackson Boulevard (SI-7J), Chicago, Illinois 60604. You may wish to review the Administrative Record to assist you in responding to this letter, but your review should not delay such response beyond the 60-day period provided by CERCLA.

Initial Conference

To further facilitate your and any other PRPs' ability to present a "good faith offer" within the 60-day time limit, an initial settlement conference may be held to discuss this matter. A Statement of Work (SOW) and proposed consent decree are enclosed as Enclosure C to this letter for your consideration.

60-Day Deadline

Except in extraordinary circumstances explained in a written request, no extension to the 60-day moratorium period will be granted by EPA. As stated above, if no agreement can be reached pursuant to Section 122(e)(4) of CERCLA, EPA may immediately proceed to undertake such further action as authorized by law to conduct the RD/RA at the Site.

PRP Response and EPA Contact Person

As a PRP, you should notify EPA in writing within 10 days of receipt of this letter of your willingness to participate in negotiations to perform or finance the activities described herein. If EPA does not receive a timely response, EPA will assume that you do not wish to negotiate a resolution of your potential responsibility in connection with OU 1 and that you have declined any involvement in performing the response actions.

Your response should indicate the appropriate names, addresses, and telephone numbers for further contact with you. If you are already involved in discussions with state or local authorities, engaged in voluntary cleanup action, or involved in a lawsuit regarding this Site, you should continue such activities as you see fit. This letter is not intended to advise or direct you to restrict or discontinue any such activities. However, you are advised to report the status of those discussions or actions in the response to this letter and to provide a copy of the response to any other parties involved in those discussions or actions. Your response letter should be sent to:

Stephanie Linebaugh
Remedial Project Manager
U.S. Environmental Protection Agency, Region 5
77 West Jackson Blvd. (SR-6J)
Chicago, Illinois 60604-3590

Thomas Martin
Associate Regional Counsel
Office of Regional Counsel (C-13J)
U.S. Environmental Protection Agency, Region 5
77 West Jackson Blvd.
Chicago, Illinois 60604-3590

Natural Resource Trustee Notification

EPA is cooperating with the Trustees of natural resources within the Sauget Industrial Corridor, including the U.S. Fish & Wildlife Service, Illinois Environmental Protection Agency and Illinois Department of Natural Resources. By a copy of this letter, EPA is notifying the State of Illinois and the Natural Resource Trustees, in accordance with Section 122(j) of CERCLA, of its intent to enter into negotiations concerning the conduct of an RD/RA at the Site. EPA

encourages the PRPs to engage the Natural Resource Trustees in these negotiations so that natural resource damages can be resolved in the context of an RD/RA consent decree.

Resources and Information for Small Businesses

As you may be aware, on January 11, 2002, President Bush signed into law the Superfund Small Business Liability Relief and Brownfields Revitalization Act. This Act contains several exemptions and defenses to CERCLA liability, which we suggest that all parties evaluate. You may obtain a copy of the law via the Internet at <https://www.epa.gov/brownfields/brownfields-laws-and-regulations> and review EPA guidance regarding these exemptions at <http://www.epa.gov/compliance/>.

In addition, if you are a service station dealer who accepts used oil for recycling, you may qualify for an exemption from liability under Section 114(c) of CERCLA. EPA guidance regarding this exemption can be found on the Internet at <http://www.epa.gov/enforcement>. If you believe you may qualify for the exemption, please contact Stephanie Linebaugh at (312) 353-2315 to request an application/information request specifically designed for service station dealers.

EPA has created a number of helpful resources for small businesses. EPA has established the National Compliance Assistance Clearinghouse as well as Compliance Assistance Centers which offer various forms of resources to small businesses. You may inquire about these resources at <http://www.epa.gov/compliance/compliance-assistance-centers>. In addition, the EPA Small Business Ombudsman may be contacted at <http://www.epa.gov/resources-small-businesses/forms/contact-us-about-resources-small-businesses>. Finally, EPA developed a fact sheet about the Small Business Regulatory Enforcement Fairness Act (SBREFA), which is enclosed as Enclosure D with this letter and available on the Agency's website at <http://www.epa.gov/compliance/small-business-resources-information-sheet>.

Further Information

Please contact Ms. Linebaugh at (312) 353-2315, if you need further information regarding this letter; or Mr. Martin at (312) 886-4273, if you have any legal questions.

We hope that you will give this matter your immediate attention.

Sincerely,

A handwritten signature in dark ink, appearing to read "J. Boone" or similar, followed by a small flourish.

Denise Boone, Acting Chief
Remedial Response Branch #1
Superfund Division

Enclosures

List of PRPs

Enclosure A: Record of Decision

Enclosure B: Itemized Cost Summary

Enclosure C: Statement of Work

Proposed Consent Decree

Enclosure D: SBREFA Fact Sheet

cc: Paul Lake, Illinois Environmental Protection Agency
Thomas Heavisides, Illinois Department of Natural Resources
Gerald T. Karr, Office of the Illinois Attorney General
Annette Trowbridge, U.S. Fish and Wildlife Service
Lindy Nelson, U.S. Department of the Interior, Office of the Solicitor General



Sauget Area 2 Superfund Site

Operable Unit 1

Sauget and Cahokia, St. Clair County, Illinois

Record of Decision



U.S. Environmental Protection Agency Region 5

77 W Jackson Blvd.
Chicago, IL 60604

December 2013

ENCLOSURE A

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Appendix G – State Concurrence Letter

Part 1 – Declaration

1.1 – Site Name and Location

Sauget Area 2 Site

Operable Unit 1 (soil, sediments, surface water and groundwater contamination source areas)

CERCLIS ID# ILD000605790

Sauget and Cahokia, St. Clair County, Illinois

1.2 – Statement of Basis and Purpose

This decision document presents the remedy chosen by the U.S. Environmental Protection Agency (EPA) ("Selected Remedy") for Operable Unit 1 (OU1) at the Sauget Area 2 Site in Sauget and Cahokia, St. Clair County, Illinois. EPA chose the Selected Remedy for OU1 in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986, and, to the extent practicable, the National Contingency Plan (NCP). This Record of Decision (ROD) for the Selected Remedy includes the documents considered and listed in the Administrative Record Index at Appendix A.

The State of Illinois has indicated that they concur with the Selected Remedy. The State's letter supporting the Selected Remedy will be added to Appendix G upon receipt.

1.3 – Assessment of Site

The Selected Remedy is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

1.4 – Description of Selected Remedy

As set forth in Section 2.2 below, EPA and Site potentially responsible parties (PRPs) have already implemented extensive clean-up activities in Sauget Area 2. These actions have addressed some of the more toxic and mobile contaminant source materials formerly present at the Site. A "source material" is material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration for contamination to groundwater, surface water, or air; or acts as a source for direct exposure.

The Selected Remedy, referred to as remedial action for OU1, will address remaining contaminant source materials at the Site and will be the first of two remedial decisions for remedial action for the Sauget Area 2 Site. EPA's overall strategy for cleaning up the Site is to first address soil, sediments, surface water, and groundwater contamination source areas through this remedial action for OU1, which will be the final remedy for contaminated soil, sediments, surface water, and groundwater contamination source areas at the Site. Area-wide groundwater contamination resulting from contamination present in the Sauget Area 1 and 2 Sites will be

addressed in a separate, subsequent remedial action after the soil, sediment, surface water and source area remedies are implemented in the Sauget Area 1 and 2 Sites. The regional groundwater remedy will be selected in a separate groundwater ROD for the Sauget Area 1 and Sauget Area 2 Superfund Sites.

The remedial action proposed in this ROD will be the final remedy for contaminated soils, sediments, surface water, and groundwater contamination source areas at the Sauget Area 2 Site. As described further in Section 2.1 below, Sauget Area 2 consists of five inactive disposal areas (Sites O, P, Q, R, and S). Of these disposal sites, three are closed landfills (Sites P, Q, and R), one consists of four closed sludge lagoons (Site O), and one is a waste disposal site (Site S) associated with an abandoned solvent reclamation facility. Figure 1 shows the location of the Sauget Area 2 Sites. The Selected Remedy for OU1 at the Sauget Area 2 Site, in addition to the continued operation of the existing groundwater barrier wall and extraction system (described below), consists of the following alternatives:

- Selected Alternative for Site O and O North: Alternative O2: 35 IAC § 724 Compliant Soil Cap Over Identified Waste Areas and Institutional and Access Controls;
- Selected Alternative for Site P: Alternative P3: Collection, Treatment, and Off-Site Disposal of NAPL at Well (LEACH P-1), Asphalt Cap over Potentially Mobile Source Area (SA-P-3/AT-P-5), 35 IAC § 807 Solid Waste Landfill Cap Over Remainder of Identified Waste Areas, Vapor Intrusion Mitigation, and Institutional and Access Controls;
- Selected Alternative for Site Q North: Alternative QN2: 35 IAC § 724 Compliant Crushed Rock Cap Over Dogleg Area, Vapor Intrusion Mitigation, and Institutional and Access Controls;
- Selected Alternative for Site Q Central: Alternative QC3: In-Situ Soil Vapor Extraction (SVE) at Potentially Mobile Source Area (AT-Q32), 35 IAC § 724 Compliant Crushed Rock Cap Over Identified Waste Areas, Shoreline Erosion Protection, and Institutional and Access Controls;
- Selected Alternative for Site Q South and Q South Ponds: Alternative QS3: Removal of Intact Drums at AT-Q35, 35 IAC § 724 Compliant Cap Over Identified Waste Areas, and Institutional and Access Controls;
- Selected Alternative for Site R: Alternative R2: 35 IAC § 724 Compliant Soil Cap Over Entire Site and Institutional and Access Controls; and
- Selected Alternative for Site S: Alternative S3: In-Situ SVE of Potentially Mobile Source Area, 35 IAC § 724 Compliant Soil Cap Over Entire Site, and Institutional and Access Controls.

¹ A 35 IAC § 724 compliant soil or crushed rock cap meets the performance standards of a RCRA subtitle C cap, except the component requiring long-term minimization of migration of liquids. This component is not appropriate for the Sauget Area 2 Sites due to Site-specific conditions (see Section 2.10.2).

This Selected Remedy for OU1 at the Sauget Area 2 Site addresses principal threat wastes that are present at the Site. A "principal threat" waste is a source material that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur. Previous removal actions conducted by EPA at Site Q Central and Site Q South already have removed principal threat wastes by excavating and disposing off-Site approximately 3,271 drums and 14,000 tons of high-level polychlorinated biphenyl (PCB) contaminated soil. EPA also ordered the construction of a groundwater barrier wall, called a Groundwater Migration and Control System (GMCS), next to the Mississippi River as an early interim OU2 groundwater remedy to capture and treat area groundwater before it releases to the River.² However, additional principal threat wastes have been observed at Site P, Q North, Q South, and R, and the GMCS and the remedies selected in this ROD target these areas. Specifically, Alternative P3 addresses principal threat wastes on Site P by treating the recovered NAPL located there through removal and off-Site incineration. Alternative QS3 addresses principal threat wastes at Site Q South through removal and off-Site treatment and disposal of intact drums located there. The principal threat wastes identified on Site Q North and Site R, as well as the NAPL located at these two sites, is captured by the Sauget Area 2 GMCS and treated by the Village of Sauget American Bottoms Regional Water Treatment Facility (ABRTF).

To address the remaining low-level threat waste, engineering controls³ in the form of engineered covers will be installed to prevent the direct contact exposure pathway⁴. Engineered covers meeting the requirements of 35 IAC § 724⁵ will be installed over Sites O, O North, Q North, Q Central, Q South, R, and S; and a 35 IAC § 807⁶ cap will be installed over Site P. Additionally, contaminants will be treated in-situ with SVE at Site Q Central and Site S.

1.5 - Statutory Determinations

The Selected Remedy is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to the remedial action, is

² In September 2002, EPA issued a CERCLA Section 106 unilateral administrative order (UAO) requiring potentially responsible parties (PRPs) to install the Sauget Area 2 GMCS as an interim OU2 groundwater remedy for the Sauget Area 2 Site. This system is comprised of a 3,300 ft long "U"-shaped, fully penetrating barrier wall located downgradient of Site R, Sauget Area 2, the former Clayton Chemical facility, Solutia's Krummrich plant as well as other facilities, and Sauget Area 1. The barrier wall extends from approximately 3 feet below ground surface down to the top of bedrock and includes three groundwater extraction wells on the upgradient side of the wall. The GMCS intercepts and captures an estimated 210 million gallons of contaminated groundwater a year, which is pumped to the American Bottoms Regional Water Treatment Facility (ABRTF) in Sauget. The groundwater is treated at the ABRTF and ultimately discharged to the Mississippi River in compliance with the terms and conditions of the ABRTF's National Discharge Pollutant Discharge Elimination System (NPDES) permit issued under the Clean Water Act.

³ Engineering controls encompass a variety of engineered and constructed physical barriers (e.g., soil capping, sub-surface venting systems, mitigation barriers, fences) to contain and/or prevent exposure to contamination on a property.

⁴ An exposure pathway refers to the way in which a person may come into contact with a hazardous substance, whether it is a chemical, biological, or some other harmful substance. There are three basic exposure pathways: inhalation, ingestion, or direct contact.

⁵ State of Illinois Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities.

⁶ State of Illinois Standards for Solid Waste.

cost-effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

This remedy satisfies the statutory preference for treatment as a principal element of the remedy (i.e., reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment). The Selected Remedy calls for the treatment of NAPL through off-Site incineration of the collected NAPL from Site P, the removal and off-Site treatment and disposal of intact drums from Site Q South, and the treatment of contaminants in-situ with SVE at Site Q Central and Site S. Additionally, NAPL identified on Site Q North and Site R will continue to be captured by the GMCS and treated by the American Bottoms Regional Water Treatment Facility (ABRTF) in Sauget, Illinois. By utilizing treatment in this manner as part of the remedy for the Site, the Selected Remedy satisfies the statutory preference for remedies to employ treatment as a principal element.

However, because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-Site above levels that would allow for unlimited use and unrestricted exposure, EPA will conduct a statutory review within five years after initiation of the remedial action and every five years subsequent, to ensure that the remedy is, or will be, protective of human health and the environment.

1.6 – Data Certification Checklist

The following information is included in the *Decision Summary* section of this ROD. Additional information can be found in the Administrative Record for this Site.

Information Item	Location in ROD
Contaminants of concern and their respective concentrations	Section 2.7.2
Baseline risk represented by the contaminants of concern	Section 2.7
Clean-up levels established for contaminants of concern and the basis for these levels	Section 2.8
How source materials that constitute principal threats will be addressed	Sections 2.11 and 2.13
Current and reasonably anticipated future land use assumptions in the baseline risk assessment and the ROD	Section 2.7.1
Estimated capital, annual operation and maintenance, and total present worth costs, discount rate, and the number of years over	Section 2.9 and Appendix C

which the remedy cost estimates are projected	12/16/13
Key factor(s) that led to the selection of the remedy	Sections 2.10 and 2.12

1.7 - Authorizing Signatures

EPA, as the lead agency for the Sauget Area 2 Superfund Site (ILD000605790), formally authorizes this Record of Decision.



Richard C. Karl, Director
Superfund Division
EPA Region 5

12/16/13

Date

The State of Illinois Environmental Protection Agency (Illinois EPA), as the support agency for the Sauget Area 2 Site, has indicated that they will concur with this ROD. The State's concurrence letter will be added to Appendix G upon receipt.

Part 2 – Decision Summary

2.1 - Site Name, Location, and Brief Description

The Sauget Area 2 Site is located in the Villages of Sauget and Cahokia, in St. Clair County, Illinois, just east of the Mississippi River, and consists of five inactive disposal areas (Sites O, P, Q, R, and S) described in Table 1 below. Of these disposal sites, three are closed landfills (Sites P, Q, and R), one consists of four closed sludge lagoons (Site O), and one is a waste disposal site (Site S) associated with an abandoned solvent reclamation facility. Figure 1 shows the location of the Sauget Area 2 Sites.

For organizational purposes, EPA has divided the Sauget Area 2 Site into two separate areas, each of which is called an "operable unit" or "OU." OU1 consists of the soil, sediment, surface water and groundwater contamination source areas at the Sauget Area 2 Site. OU2 is the contaminated groundwater itself. EPA will address groundwater contamination in the Sauget Area after remedies are implemented for the soil, sediments, surface water, and groundwater contamination source areas at the Sauget Area 1 and 2 Sites.

EPA is the lead agency for the Sauget Area 2 Site. Illinois EPA serves as the support agency. PRPs investigated the Site, with EPA oversight, pursuant to the remedial investigation/feasibility study (RI/FS) required under a Superfund Administrative Order on Consent (AOC) signed on November 20, 2000. EPA intends to pursue responsible parties to fund or implement the remedy for OU1 set forth in this ROD. That action would be set forth in a remedial design/remedial action (RD/RA) order or settlement for OU1.

Table 1: Descriptions of Sauget Area 2 Disposal Areas

Site Name	Size (acres)	City	Location
Site O, O North, O South	28	Sauget, Illinois	Located on Mobile Avenue, northeast of the American Bottoms Regional Wastewater Treatment Facility (ABRTF) and east of the flood control levee.
Site P	32	East St. Louis and Sauget, Illinois	Bounded by Illinois Central Gulf Railroad tracks, the Terminal Railroad Association tracks and Monsanto Avenue.
Site Q – North	52	Sauget and Cahokia, Illinois	The northern portion of Site Q is bordered on the north by Site R and Monsanto Avenue; on the south by the main track of the Alton and Southern Railroad; on the east by the flood control levee; and on the west by the Mississippi River. The northern portion of Site Q that wraps around the eastern boundary of Site R is known as the "Dogleg" portion of Site Q North.

Site Q – Central	67	Sauget and Cahokia, Illinois	The central portion of Site Q is bordered on the north by Q north; on the south by the Alton and Southern Railroad; on the east by the flood control levee and the Illinois Central Gulf Railroad; and on the west by the Mississippi River.
Site Q – South	87	Sauget and Cahokia, Illinois	The southern portion of Site Q is bordered on the north by the Alton and Southern Railroad; on the south by Cargill Road; on the east by the flood control levee and the Illinois Central Gulf Railroad; and on the west by a 10-foot wide easement owned by Union Electric for transmission lines and a spur track of the Alton and Southern Railroad.
Site R	36	Sauget, Illinois	Site R is bounded on the north by Monsanto Avenue; on the east by the dogleg portion of Site Q; on the south by the main portion of Site Q; and on the west by the Mississippi River. The address for the site is 5 Riverview Avenue.
Site S	<1	Sauget, Illinois	Site S is less than one acre in size and is located southwest of Site O.

Heavy industry has been present on the east bank of the Mississippi River between Cahokia and Alton, Illinois, for nearly a century. Industrial activity in the area peaked in the 1960s. Although many industrial facilities have closed down throughout the American Bottoms floodplain, Sauget Area 2 and the surrounding area is still highly industrialized. Currently, the area is used for industry, warehousing, bulk storage, wastewater treatment, hazardous waste treatment, waste recycling, and truck terminals. In addition to heavy industry, the area also has commercial facilities, bars, nightclubs, convenience stores, and restaurants. A number of petroleum, petroleum product, and natural gas pipelines are located in the area.

No residential land use is located immediately adjacent to or downgradient of Sites O, P, Q, R, or S. Residential areas of Sauget and East St. Louis are separated from the Sauget Area 2 Site by other industries or by undeveloped tracts of land. Limited residential areas exist approximately 3,000 feet to the northeast and southeast of the Site's boundaries. According to the 2010 census, the population of the Village of Sauget, which is where the majority of the Sauget Area 2 Site is located, is 159; the Village of Cahokia is 15,241; and East St. Louis is 27,006.

In the past, groundwater from the American Bottoms aquifer was a major source of water for the area and was used for industrial, non-potable public, and irrigation purposes. Groundwater levels prior to industrial and urban development were near land surface. Intensive industrial withdrawal, along with the use and construction of a system of drainage ditches, levees, and canals to protect developed areas, lowered the groundwater elevation for many years. By the mid-1980s; however, the groundwater levels had increased due to reduced pumping, high river

stages, and high precipitation. Currently, no groundwater is being pumped from the American Bottoms aquifer in the vicinity of Sauget Area 2 for public, private, or industrial supply purposes.

Groundwater is not a source of drinking water in the area. The Village of Sauget and the City of East St. Louis have issued ordinances prohibiting the use of groundwater as a potable water source. These ordinances were issued in response to historic industrial land use in the region and resulting groundwater quality impairments. The Village of Cahokia has an ordinance that restricts groundwater use in part of the municipality, but it does not cover the portion of the Sauget Area 2 Site that is located in Cahokia. Groundwater use restrictions will likely remain in place for the foreseeable future due to the extent of the groundwater quality impairments.

The source of drinking water for area residents is an intake in the Mississippi River. This intake is located at River Mile 181, approximately three miles north and upgradient of the Sauget Area 2 Site. The drinking water intake is owned and operated by the Illinois American Water Company (IAWC) of East St. Louis, and it serves the majority of residences in the area. IAWC supplies water to Sauget and also to portions of Cahokia and Centerville Township. Public water supply is the exclusive potable water source in the vicinity of the Sauget Area 2 Site.

The nearest downstream surface-water intake on the Illinois side of the Mississippi River is located at River Mile 110, approximately 68 miles south of Sauget Area 2. This intake supplies drinking water to residents in the Town of Chester and surrounding areas in Randolph County, Illinois. The nearest downstream public water supply on the Missouri side of the river is located at River Mile 149, approximately 29 miles south of Sauget Area 2. At this location, the Village of Crystal City, Missouri, utilizes a Ranney⁷ well adjacent to the Mississippi River as a source for drinking water.

The Mississippi River is the major surface water body draining the area. The stretch of the River adjacent to Site R is bounded by steep embankments lined with rip-rap. A few scattered structures in the River, such as a wing dam and a sunken barge, offer some access points for aquatic birds and mammals and potential protection for fish. In the vicinity of the Site, no bordering wetlands, appreciable bordering vegetation, or submerged or emergent vegetation are present. Recreational and commercial fishing does occur in the Mississippi River; however, no fishing access is available along the Site border. The Sauget Area 2 Site property is used as habitat by at least six threatened and endangered species, including the federally threatened bald eagle and state endangered snowy egret and little blue heron.

2.2 - Site History and Enforcement Activities

A brief description of the disposal, contaminant, and enforcement history for each site is discussed below. A number of initial response actions have been taken at three of the five sites (Sites O, Q, and R) that comprise the Sauget Area 2 Site. No action has been taken at Site P or Site S.

⁷ A Ranney well collection system is a patented type of radial well used to extract water from an aquifer with direct connection to a surface water source like a river or lake.

Site O - In 1952, the Village of Sauget began operating a wastewater treatment plant in the area now referred to as Site O. In addition to providing treatment for the Village of Sauget, the plant treated effluent from a number of Sauget industries. In 1965, the four lagoons which comprise Site O were constructed at the Site. Between approximately 1966 and 1978, the lagoons were used to dispose of clarifier sludge from the Village of Sauget wastewater treatment plant (WWTP). The lagoons were initially identified as Site O during an investigation conducted by Illinois EPA in the 1980s (URS, 2002a). The area known as Site O North was identified during review of aerial photographs and was subsequently determined to be the location of pits associated with operation of the Village of Sauget WWTP. Based on the aerial photographs, Site O South appeared to be associated with a breach in the dike of the sludge lagoons.

In 1980, the Village of Sauget closed the four lagoons that comprise Site O by stabilizing the sludge with lime and covering it with approximately two feet of soil. The construction of the cover was not overseen or approved by either EPA or Illinois EPA. Currently, the former lagoons are vegetated with grass, brush, bushes, and trees.

Site P - Disposal Site P was operated by Sauget and Company from 1973 to approximately 1984. It was an Illinois EPA-permitted landfill and was used for municipal and industrial waste disposal. Some of the general industrial wastes accepted at Site P included diatomaceous-earth filter cake from the Edwin Cooper Company and non-chemical waste from Monsanto. Site P is currently inactive and for the most part covered, and access to the site is unrestricted. A nightclub and asphalt parking lot occupy three acres in the southeast corner of the Site.

Site Q - Between the 1950s and the 1970s, Site Q operated as a landfill that accepted municipal waste, septic tank pumpings, drums, organic and inorganic wastes, solvents, pesticides, paint sludge, plant trash, waste from industrial facilities, and demolition debris. Disposal at Site Q occurred both on the surface and subsurface. Due to its large size and varied disposal history, Site Q was divided into sections based on the nature and extent of contamination. Site Q sub-areas are described as follows and presented in Figure 1:

- Site Q North - The northern portion of Site Q. Additionally, the "Dogleg" area is part of Site Q North, which is the northern portion of Site Q North due east of Site R, bounded on the north and south by extensions of the Site R north and south boundaries.
- Site Q Central- The central portion of Site Q.
- Site Q South- The portion of Site Q South of the Alton & Southern Railroad. Additionally, the Q South Ponds are part of Site Q South.

In 1993, Site Q was flooded and River currents unearthed a number of barrels containing hazardous waste. EPA conducted a removal action along the shore of the Mississippi River at Site Q Central; removing polychlorinated biphenyls (PCB) contaminated soils and drums exposed by erosion during the flood. On October 18, 1999, EPA initiated a second removal action at Site Q South. EPA excavated Site waste from eight different areas on 25-acres of Site Q South. Approximately 17,032 tons of waste, comprised of about 20 percent low-level waste (soil concentrations less than 50 parts per million (ppm) of PCBs) and 80 percent high-level waste (soil concentrations greater than 50 ppm of PCBs) were shipped off-Site for disposal. In

addition, 3,271 drums were removed and disposed off-Site. This second removal action was completed on April 5, 2000.

Currently, usage at Site Q includes a roadway, Pitzman Avenue, and a supply terminal along part of Site Q North; a barge terminal facility and five ethanol storage tanks are located along Site Q North and Q Central; and predominantly vacant open land at Site Q South. Access to parts of Site Q North, Site Q North Dogleg, and Q Central are restricted by fences; and access to Site Q South is unrestricted.

Site R - Industrial Salvage and Disposal Inc. operated the River's Edge Landfill, now called Site R, for Monsanto from 1957 to 1977. Hazardous and non-hazardous bulk liquid and solid chemical wastes and drummed chemical wastes from Monsanto's W.G. Krummrich plant and, to a lesser degree its Queeny plant in St. Louis, were disposed of at the site. Disposal began in the northern portion of the site and expanded southward. Wastes contained toluene, xylenes, poly-aromatic hydrocarbons (PAHs), chlorobenzenes, chlorophenols, pentachlorophenol (PCP), chloroanilines, phenols, aromatic nitro compounds, aromatic amines, aromatic nitro amines, chlorinated aromatic hydrocarbons, aromatic and aliphatic carboxylic acids, and condensation products of these compounds.

Pursuant to a negotiated agreement with the State of Illinois, Monsanto installed a clay cap on Site R in 1979 to cover the waste, limit surface water infiltration through the landfill, and prevent direct contact with the landfill material. The cap thickness ranges from 2 feet to approximately 8 feet. In 1985, Monsanto installed a 2,250 foot long rock revetment along the east bank of the Mississippi River downgradient of Site R. The purpose of the stabilization project was to prevent further erosion of the riverbank and thereby minimize potential for the release of waste material from the landfill. During a flood in 1993, Site R was flooded but the clay cap was not overtopped. No erosion of the Site R riverbank or cap resulted from this flood.

In 2000, EPA entered into an Administrative Order on Consent (AOC) with the PRPs to conduct a remedial investigation/feasibility study (RI/FS) at the five waste disposal Sites (O,P,Q,R, and S) to investigate and assess what clean-up remained to be done for the Site after the above referenced actions were completed. Under the AOC, the PRPs conducted RI activities from June 2002 through October 2002, with EPA and Illinois EPA oversight. A draft RI/FS report was submitted by the PRPs to EPA in 2004. Based upon its review of the draft RI/FS report, EPA determined that supplemental investigation (SI) work was necessary to fill data gaps. The supplemental investigation work consisted of the following: completion of supplemental field investigations; installation of monitoring well clusters; investigation of non-aqueous phase liquids (NAPL⁸), vapor intrusion⁹, and principal threat wastes; and completion of a regional fate

⁸ NAPLs are "non-aqueous phase liquids" that do not mix readily with water and therefore flow separately from ground water, acting as a continual source of groundwater contamination until they are removed or dissipate. Many contaminants, including chlorinated solvents and petroleum products, enter the subsurface in the form of an oily liquid, known as a NAPL.

⁹ Certain hazardous chemicals that are released into the subsurface as liquids or solids may form hazardous gases (i.e., vapors) that migrate through the vadose zone and eventually enter buildings as a gas by migrating through cracks and gaps in basement floors and walls or foundations, including perforations due to utility conduits and any other openings (e.g., sump pits). Vapor intrusion is the general term given to migration of hazardous vapors from any subsurface contaminant source, such as contaminated soil or groundwater, through the vadose zone and into indoor air.

and transport groundwater model to fill data gaps in the RI/FS. During the RI and SI from 2002 through 2007, the PRPs conducted extensive Site investigations of the disposal areas, groundwater, surface water, air, waste, and soil. EPA evaluated results of these investigation studies in the Final FS Report for Sauget Area 2 (May 2013).

Additionally, during this time period, EPA determined that an interim response action was necessary to address on-going releases into the Mississippi River. In September 2002, EPA signed the ROD for the groundwater operable unit (OU2) of the Sauget Area 2 Superfund Site, which selected an interim groundwater remedy for the Sauget Area 2 Site to address the release of contaminated groundwater into the Mississippi River. Subsequently, in October 2002, EPA issued a UAO to the Sauget Area 2 Site PRPs for Remedial Design and Interim Remedial Action associated with the Sauget Area 2 interim groundwater remedy. The two main components of the remedial action called for in the Sauget Area 2 OU2 interim ROD were the construction of the barrier wall and the installation of three groundwater recovery wells. The wall, together with the extraction wells, is referred to as the Groundwater Migration Control System, or GMCS. Although the three extraction wells are intended to be the principal groundwater control measure, the barrier wall serves to reduce the volume of groundwater flowing into the extraction system from the Mississippi River during operation of the extraction wells, thereby reducing operation and maintenance (O&M) costs by reducing the volume of water treated. The PRPs began construction of the interim remedy in 2003 and completed construction in 2005, at the cost of approximately \$27,000,000. Annual operation and maintenance costs for the GMCS are estimated to be \$2,000,000 per year.

The Sauget Area 2 GMCS was designed to abate adverse impacts on the Mississippi River resulting from the discharge of groundwater from Sauget Area 2 Sites O, Q North, R, and S; the former Clayton Chemical facility site; Sauget Area 1 Sites G, H, I South, and L; the southern portion of the W.G. Krummrich Facility (which is also being addressed under RCRA Corrective Action); and other industries in the Sauget area.

The major components of the OU2 interim groundwater remedy include the following, subject to several EPA-approved changes to optimize the construction and operation of the barrier wall and pumping system:

- Physical Barrier - A 3,500 foot long, "U"-shaped, fully penetrating, bentonite slurry¹⁰ barrier wall installed between the downgradient boundary of Sauget Area 2 Site R and the Mississippi River to abate the release of impacted groundwater. The barrier wall was installed to the top of the bedrock surface (approximately 120 to 140 feet deep). The purpose of the barrier wall is to minimize the volume of groundwater that needs to be extracted;
- Groundwater Extraction - Three partially penetrating groundwater recovery wells inside the "U"-shaped barrier wall to abate groundwater moving to the wall;

¹⁰ In July 2003, EPA signed an Explanation of Significant Differences (ESD) to modify the OU2 interim remedy. The ESD documented that a conventional soil-bentonite slurry barrier wall would be constructed instead of a jet grouted barrier wall. This change did not affect the overall scope of the interim remedy.

- Groundwater Treatment - Once extracted, the contaminated groundwater is treated at the American Bottoms Regional Water Treatment Facility (ABRTF) prior to being discharged to the Mississippi River. ABRTF provides primary treatment as well as secondary biological treatment enhanced by powdered activated carbon;
- Groundwater Quality Monitoring - Groundwater samples from wells located between the barrier wall and the River are collected periodically. Concentrations of key compounds are plotted over time to determine and track long-term trends;
- Groundwater Level Monitoring - Groundwater level monitoring is performed to ensure acceptable performance of the physical barrier;
- Surface Water Monitoring - Surface water samples are collected in the plume release area to determine the effect of any contaminants migrating through, past, or beneath the barrier wall and being released to the Mississippi River; and
- Institutional Controls - Institutional controls are used to limit access to Site R and Mississippi River by existing fencing at Site R, a very steep riverbank, and the absence of public roads leading to this area.

The GMCS intercepts and captures an estimated 210 million gallons of contaminated groundwater a year, which is pumped to the ABRTF in Sauget, Illinois. The groundwater is treated at the ABRTF and ultimately discharged to the Mississippi River in compliance with the terms and conditions of the ABRTF's National Pollutant Discharge Elimination System (NPDES) permit issued under the Clean Water Act. Sampling has indicated that the implemented interim groundwater remedy has addressed on-going ecological risk to the Mississippi River.

Currently, access to Site R is restricted by a perimeter fence surrounding the site and monitored by the PRPs (URS, April 2002b).

Site S - In the mid-1960s, wastes from the former Clayton Chemical property were disposed of in a shallow, on-site excavation which is now designated as disposal Site S. The wastes were from the solvent recovery process at Clayton which involved steam-stripping. Still bottoms from the stripping process were disposed of at the site.

Currently, the northern portion of Site S is covered with grass and the remainder of the site is covered with crushed rock and the site is fenced.

Former Clayton Chemical Site - The former Clayton site, referred to as the "RRG/CCC Site" is located at 1 Mobile Avenue, Sauget, Illinois. The RRG/CCC Site is approximately 7 acres in size and is situated due east of Sauget Area 2 Site R and the northern portion of Sauget Area 2 Site Q. The site is located within, but is not a formally designated Sauget Area 2 Site. In its early history, the site served as a railroad roundhouse and starting in the 1960s until 1998, a solvent and waste oil recovery facility.

In June 2001, EPA conducted a site assessment at the RRG/CCC Site. The site assessment indicated soil contamination (including elevated concentrations of solvents, heavy metals,

ignitable compounds, and PCBs) from the release of hazardous substances into the environment. In addition, containers remaining at the RRG/CCC Site were found to contain hazardous substances. Based on the porous, sandy nature of the soil at the site, EPA concluded that hazardous substances could migrate into the groundwater. In October 2002, EPA and a number of the PRPs for the RRG/CCC Site entered into an AOC which required the signatories to the AOC to conduct a time critical removal action. The action involved the removal of all liquid hazardous substances contained in drums, tanks, containers, and other vessels at the RRG/CCC Site. The RRG/CCC Site AOC signatories performed this removal action between 2002 and 2004. In October 2005, EPA and numerous RRG/CCC Site PRPs entered into another AOC requiring the signatories to characterize, remove, and properly dispose of hazardous substances (solids and contaminated soils) located at the RRG/CCC Site. Additional PRPs were added in an amendment to this AOC in January 2006. Soil capping and operation and maintenance plan requirements were added in an AOC amendment in January 2008. On December 22, 2006, EPA issued General Notice of Potential Liability Letters for the Sauget Area 2 Sites to RRG/CCC Site PRPs based upon the downgradient migration of contaminated groundwater from the RRG/CCC Site into the Sauget Area 2 Sites. In March 2008, EPA issued a UAO to certain RRG/CCC Site PRPs requiring the UAO recipients to construct a cap over hazardous substances in soils remaining on the RRG/CCC Site. The construction of the cap has been completed.

2.3 – Community Participation

In June 2013, EPA made available to the public the RI and FS Reports and the Proposed Plan for the Sauget Area 2 Site. These documents can be found in the Administrative Record for the Site. The Administrative Record is maintained at two public repositories: the EPA Region 5 Docket Room, 77 West Jackson Boulevard (7th Floor) Chicago, Illinois, and the Cahokia Public Library, 140 Cahokia Drive, Cahokia, Illinois. The Proposed Plan set forth the remedial alternatives for the Site and EPA's proposed remedial action for OUI. After issuing the Proposed Plan, EPA held a public comment period between June 7 and July 8, 2013. When the Proposed Plan was issued, EPA mailed a fact sheet to area residents informing them about the Proposed Plan. The fact sheet advised residents that the RI and FS Reports and Proposed Plan were available for viewing at the public repositories. The fact sheet included the date, time, and location of the public meeting. At the public meeting on June 12, 2013, EPA and Illinois EPA representatives answered questions about the Site and the remedial alternatives. EPA's responses to the comments received during the public comment period are included in the *Responsiveness Summary*, which is Part 3 of this Record of Decision.

2.4 - Scope and Role of Operable Unit or Response Action

As with many Superfund sites the problems at the Sauget Area 2 Site are complex. The Sauget Area 2 Site consists of 4.5 million cubic yards of contaminated soil and wastes located near the Mississippi River, where the water table across the Site is approximately 10 feet below ground surface (bgs). Therefore, most of the waste from the various sites in Area 2 is located under the area groundwater table, and the rising and falling River levels cause the water table to fluctuate, creating a flushing effect in the waste areas.

Also potentially effecting Site conditions is the U. S. Army Corps of Engineers (USACE) proposal to install relief wells from levee stations 1113+00 to 1116+00 and 1133+00 to 1135+00 within the Metro East Sanitary District levee system as part of its Illinois Flood Protection Project. Relief wells are groundwater wells, which are used for flood control. Relief wells are installed adjacent to earthen levees to relieve the pressure on the river side of the levee and thus to prevent the collapse of the levee during flooding. The greater flow of water in the river during a flood creates a pressure gradient such that more water infiltrates the soil of the levee. Water may then flow through the soil towards the dry side of the levee, resulting in liquefaction of the soil, and ultimately destruction of the levee. Relief wells act like valves to relieve the water pressure and allow excess water to be diverted safely.

The USACE's project area includes areas where groundwater contamination from historical industrial activities is present, including the Sauget Area 2 Site. The Illinois Flood Protection Project is necessary to protect the people living in the surrounding area during a significant flooding event. EPA is working with the U.S. Army Corps of Engineers on this project and has provided them with information about the Site and with groundwater data for the region so that this information known as the relief well project is planned and implemented in areas containing contaminated groundwater.

In order to address this complex Site, EPA has organized the work into two operable units (OUs):

- Operable Unit 1: Contamination of the on-Site soils, sediments, surface water, and groundwater source areas
- Operable Unit 2: Contamination of the groundwater aquifer

The Selected Remedy, referred to as remedial action for OU1, will be the first of two remedial decisions for the Sauget Area 2 Site. EPA's overall strategy for cleaning up the Site is to first address soil, sediment, surface water, and groundwater source contamination through this remedial action for OU1, which will be the final remedy for these media at the Site. Area-wide groundwater contamination resulting from the contaminated soil, sediments, surface water, and groundwater contamination source areas present in the Sauget Area 1 and 2 Sites will be addressed as a separate remedial action. That remedial action will be selected in a separate and subsequent ROD for groundwater contamination in Sauget Areas 1 and 2, after the remedies set forth in the source area RODs for Areas 1 and 2 are implemented.

2.5 – Site Characteristics

2.5.1 - Conceptual Site Model

To guide identification of appropriate exposure pathways and receptors for evaluation in the risk assessment, a conceptual site model (CSM) for human health was developed. The purpose of the conceptual site model is to provide a framework with which to identify source areas, potential migration pathways of constituents from source areas to environmental media where exposure can occur, and to identify potential human receptors.

A general identification of exposure pathways, exposure routes, and receptors is illustrated in the conceptual site model in Figure 2. A more detailed discussion of the receptor/area matrix for the Sites (O, O North, O South, P, Q North, Q Central, Q South, R, and S) and the Mississippi River is provided below.

Sites

The Sauget Area 2 Sites (O, O North, O South, P, Q North, Q Central, Q South, R, and S) have been used for industrial purposes for many years (since the 1930s or earlier). The sites are zoned commercial/industrial and it is likely that the sites will continue to be used well into the reasonably foreseeable future for commercial/industrial purposes. Therefore, the sites were evaluated for non-residential use scenarios in the Site-wide human health risk assessment (HHRA) (AECOM, 2009).

Receptors were identified for the sites based on the CSM and the constituents of potential concern (COPCs) identified in media in the sites. COPCs are a subset of the complete list of constituents detected in site media that are carried through the quantitative risk assessment process. COPCs were identified in groundwater in Sites O, Q Central, Q South, R, and S; in leachate in Sites O North, Q North, and R; and in soils in all sites, except for surface soil in Site O South and Site R. COPCs were identified in surface water, sediment, and fish fillets in the Site Q South Ponds.

Due to the presence of volatiles in the subsurface of the sites, an on-Site indoor industrial worker scenario was evaluated in the Vapor Intrusion HHRA (ENSR, 2008) for potential exposure to COPCs via inhalation of volatile constituents present in indoor air due to vapor intrusion from the subsurface. Buildings found with potentially complete vapor intrusion pathways, were sampled during the vapor intrusion investigation. These buildings included four buildings located on Site Q North, five buildings located on Site Q Central, one building located on Site P, one building located off-Site but near Site O, and one building located off-Site but near Site S. No buildings with potentially complete vapor intrusion pathways were identified in Site O North, O South, Q South, or R. An on-Site outdoor industrial worker scenario was evaluated for potential exposure to COPCs in surface soil via incidental ingestion and dermal contact, and via inhalation of non-volatile COPCs that may be suspended as dusts from surface soils. Additionally, these receptors were re-evaluated for potential exposure to COPCs that may volatilize into outdoor air from underlying groundwater and from soils (combined surface soil, subsurface soil, and waste).

An on-Site construction/utility worker scenario was evaluated for potential exposure to COPCs in combined soils via incidental ingestion and dermal contact, and via inhalation of particulates suspended during excavation activity as well as volatile emissions. Construction/utility work was assumed to occur up to depths of 15 feet below ground surface (bgs). Due to the shallow depth of groundwater in limited areas, the construction/utility worker may contact groundwater during excavation. Therefore, the construction worker was assumed to be exposed to COPCs in shallow groundwater via incidental ingestion and dermal contact, and via inhalation of COPCs volatilized from standing water in an excavation trench. COPCs in shallow groundwater and leachate were identified in Sites O, O North, Q Central, Q North, Q South, R, and S.

A trespassing teenager scenario was evaluated for potential exposure to COPCs in surface soil via incidental ingestion and dermal contact; via inhalation of non-volatile COPCs that may be suspended as dusts from surface soils; COPCs that may volatilize into outdoor air from underlying groundwater and from soils (combined surface soil, subsurface soil, and waste); and to COPCs in surface water and sediment from the Site Q South Ponds.

Additionally, the recreational angler scenario was evaluated for potential exposure to COPCs in fish fillet from the Site Q South Ponds.

Mississippi River

Recreational angler and trespassing teenager scenarios were evaluated for potential exposure to COPCs in sediment and surface water in the Mississippi River. In addition, the recreational angler was evaluated for potential exposure to fish fillet from the Mississippi River. Both receptors were evaluated for potential exposure to seeps into the Mississippi River in Sites Q and R.

2.5.2 - Overview of Site

The Sauget Area 2 Site covers approximately 312 acres situated in a floodplain of the Mississippi River called the American Bottoms. Topographically, the area consists primarily of flat bottomland. The Site is adjacent, or in close proximity, to the Mississippi River. Two of the Sites, Sites Q and R, are located on the wet-side of the floodwall and levee, which is operated and maintained by the USACE and the Metro East Sanitary District. The floodwall is designed to protect the City of East St. Louis and the Villages of Sauget and Cahokia from flooding from the Mississippi River. Sites O, P, and S are located on the dry-side of the floodwall and levee.

Collectively, Sites O (including Site O North and O South), P, Q (including Q North, Q Central, Q South), R, and S contain an estimated 4.5 million cubic yards of soil and waste. Site Q is the largest disposal area with an estimated waste volume of 2.6 million cubic yards, followed by Site P with 1 million cubic yards, Site R with 594,000 cubic yards, Site O with 272,000 cubic yards, and Site S with 8,000 cubic yards. All of these sites were formerly used for industrial/municipal waste disposal.

2.5.3 - Geologic and Hydrogeologic Setting

The Sauget Area 2 Site is situated in the American Bottoms floodplain of the Mississippi River. More specifically, it is situated south of East St. Louis along the eastern bank of the Mississippi River. In total, the American Bottoms floodplain encompasses 175 square miles, is 30 miles long, and has a maximum width of 11 miles. It is bordered on the west by the Mississippi River and on the east by bluffs that rise 150 to 200 feet above the valley bottom. The floodplain is relatively flat and generally slopes from north to south and from east to west. Land surface lies between 400 and 445 feet above mean sea level (msl).

The stratigraphy beneath the Sauget Area 2 Site is much like that of the rest of the floodplain. The Cahokia Alluvium is approximately 40 to 50 feet thick and exists as a fine, silty sand that is

gray and brown in color. Below this, the unconsolidated deposits of the Henry Formation are present.

Locally, the Henry Formation is characterized by medium-to-coarse sand that becomes coarser and more permeable with depth. The depth to bedrock (below ground surface) ranges from 140 feet near the River and Sauget Area 2 Sites to about 100 feet on the east side of the Sauget Area 1 Site. The groundwater level is currently between 20 to 40 feet below ground surface, but fluctuates considerably throughout the year. Figure 3 presents a generalized geologic cross-section.

Three distinct hydrogeologic units are present in the Sauget Area 2 and Area 1 Sites: 1) a shallow hydrogeologic unit (SHU); 2) a middle hydrogeologic unit (MHU), and 3) a deep hydrogeologic unit (DHU). The 30 foot thick SHU includes the Cahokia Alluvium and the uppermost portion of the Henry Formation. This unit is primarily unconsolidated, fine-grained silty sand with low to moderate permeability. The 40 foot thick MHU is formed by the upper to middle, medium to coarse sand portions of the Henry Formation. It contains higher permeability sand than found in the overlying shallow hydrogeologic unit, and these sands become coarser with depth. At the bottom of the aquifer is the DHU, which includes the high permeability, coarse-grained deposits of the lower Henry Formation. This zone is estimated to be about 30 to 40 feet thick. Groundwater flow velocity is on the order of 0.02 feet per day (7 feet per year) in the SHU, 4 feet per day (1,500 feet per year) in the MHU, and 6 feet per day (2,200 feet per year) in the DHU. Groundwater beneath Sauget Area 2 generally flows from east to west, toward the Mississippi River.

During low River stage conditions, groundwater at Sauget Area 2 flows from east to west and releases to the Mississippi River, the natural point of release for groundwater in the American Bottoms aquifer. When flood stage occurs in the Mississippi River, flow reverses. Under these conditions, groundwater flows from west to east.

2.5.4 - Sampling Strategy

On November 20, 2000, the PRPs signed an AOC with EPA to perform a remedial investigation/feasibility study at five discrete waste disposal sites (Sites O, P, Q, R, and S) on the Sauget Area 2 site. The PRPs submitted the draft RI/FS report to EPA in January 2004. Upon review of the RI/FS report, EPA determined there were data gaps in the RI/FS report and supplemental investigations (SIs) were required in order to fill identified data gaps.

The following summarizes the RI and Supplemental Investigations. SIs are included in the RI and FS Reports.

Remedial Investigations

Initial sampling and remedial investigation work, undertaken by the PRPs in 2002-2003 under the November 20, 2000 RI/FS Order, with EPA oversight, is presented below:

Disposal Area Characterization Sampling - Surface soil and subsurface soil/waste samples were collected from borings taken at each of the disposal areas (Sites O, P, Q, R, and S) in order

to characterize the depth and types of wastes present at each site and to evaluate potential exposures for the human health risk assessment including the outdoor industrial worker and construction/utility worker exposure scenarios. Additional activities included determination of disposal area boundaries using historical air photo analysis, soil gas surveys, and test trenching and identification of buried tanks and/or drums using magnetometer surveys and test trenches. Ambient air sampling was conducted upwind and downwind of the sites to determine the tendency of Site constituents to enter the atmosphere and local wind patterns. Air sampling data were subsequently evaluated in the HHRA outdoor industrial worker, construction/utility worker and trespassing teenager exposure scenarios.

Additionally, leachate wells were installed at the waste boring location within each site (three were installed at Site Q), which had the greatest indications of potential impact or the greatest depth of waste materials. Leachate samples were collected during the RI in order to assess the impact of contaminated soils and waste to groundwater.

In the original Sauget Area 2 (SA2) RI/FS document which was submitted in January 2004, the HHRA and the Baseline Ecological Risk Assessment (BERA) indicated that the ponds located in Site Q South represented a significantly different exposure potential than the surrounding non-pond area of Q South. As a result, the ponds were treated as a separate area, identified as Q South Ponds.

Groundwater Sampling - Groundwater samples were collected to define the horizontal and vertical distribution of constituents in the alluvial aquifer beneath the sites and provide information for two HHRA exposure scenarios; volatilization from groundwater to outdoor air for the outdoor industrial worker and construction/utility worker, and vapor intrusion into buildings for the indoor industrial worker. In addition, groundwater samples were collected from weathered bedrock beneath the sites to determine the vertical extent of migration from these source areas.

Groundwater flow direction was determined by installing water-level measurement piezometers in each of the three hydrogeologic units present in Sauget Area 2 and measuring groundwater-level elevations. Aquifer hydraulic conductivity was measured by conducting slug tests in piezometers completed in each of the hydrogeologic units. Aquifer grain size analyses were also performed on soil samples collected from each hydrogeologic unit.

Surface Water, Sediment, and Biota Sampling - Surface water, sediment, and biota samples were collected from the Mississippi River and the two ponds located on Site Q South to determine the extent of downstream migration of Site-related constituents and provide information for use in the HHRA (trespassing teenager and trespassing angler exposure scenarios) and the ecological risk assessment (potential ecological receptor exposures).

Additionally, in order to assess the presence of seeps and their impacts on the Mississippi River, seep grab samples were collected from one location at Site R and two locations at Site Q. A visual reconnaissance survey was conducted along the riverbank adjacent to both Sites Q and R, to identify potential sample locations. Stormwater run-off samples were also collected from two

downgradient locations at Site Q and one location at Site R to characterize run-off from the site during storm events.

Supplemental Investigations

After completion of the RI, SI field activities were performed during 2005 and 2006 through a phased approach (Phase 1, 2, and 3). Phase 1 was conducted to fill identified data gaps in the RI. Phase 2 was conducted to fill remaining data gaps associated with the groundwater impact observed at the sites. And Phase 3 consisted of a NAPL investigation to identify the nature and extent of both residual NAPL remaining in the interstitial spaces of the soil and pooled NAPL sitting on the groundwater and bedrock surfaces. In addition, a vapor intrusion investigation was completed in 2007 of occupied buildings within or near the boundaries of the sites in order to evaluate vapor intrusion as part of the HHRA.

The PRPs, with EPA oversight, performed an erosion and release aerial photo analysis in order to determine: (1) the potential for future erosion and release at Sites Q and R resulting from a flood event; (2) anomaly trenching to investigate the potential presence of buried drums or tanks based on the magnetic anomalies, and (3) soil gas concentration highs identified during the magnetometer and soil gas investigations conducted as part of the RI.

A regional survey of NAPL and potential NAPL was completed during groundwater sampling activities. Based on the NAPL survey and previous investigation results, additional NAPL investigations were conducted at Sites P and Q North. These investigations included collection of NAPL samples from the leachate well (LEACH P-1) located on Site P and advancement of soil borings and installation of monitoring wells around the regional groundwater monitoring well (Sonic-5) located on Site Q North. Soil borings and monitoring wells were not advanced or installed adjacent to LEACH P-1 because other sampling locations have provided a maximum lateral extent of NAPL observed.

Groundwater Investigations

During Phase 1 of the Sauget Area 2 SI, groundwater samples were collected from monitoring wells throughout the region. This included monitoring wells at Sauget Area 2 sites, Sauget Area 1 sites, the W.G. Krummrich facility, and the Conoco Phillips bulk storage terminal. In addition, groundwater samples were collected from 26 groundwater monitoring wells installed during Phase 2 of the Sauget Area 2 SI. Groundwater quality data from these 2005/2006 sampling programs were used for calibration of the Regional Groundwater Fate and Transport Model (GSI, 2008b).

The Regional Groundwater Fate and Transport Model was developed during the RI and SI and covers the southern portion of the American Bottoms aquifer. The fate and transport model was used to simulate the movement of groundwater plumes from the sources zones in order to characterize and define the nature and extent of groundwater contamination from the Sauget Area 1 and 2 Sites. At the request of EPA and Illinois EPA, the PRPs re-ran the model in 2012 to account for new information on pumping rates and duration of operation of the Illinois

Department of Transportation highway dewatering wells (GSI, 2012). If necessary, the model can be updated to account for changes in Site conditions, as was done in 2012.

Additionally, groundwater samples were collected from the leachate wells to determine if leaching from the disposal areas to groundwater was a migration pathway.

Vapor Investigation

The PRPs, with EPA oversight, conducted a vapor intrusion investigation and evaluation as part of the baseline HHRA for the sites. The purpose of the vapor intrusion evaluation was to determine whether volatiles and semi-volatiles (VOCs and SVOCs) detected in the subsurface air within the Sauget Area 2 Sites have potential inhalation risk associated with the vapor intrusion pathway. Only buildings with a potentially complete vapor intrusion pathway were evaluated (i.e., enclosed structures, not trailers).

Soil gas samples were collected and evaluated from 13 buildings on the Site. These buildings included four buildings located on Site Q North, five buildings located on Site Q Central, one building located on Site P, one building located off-Site but near Site O, and one building located off-Site but near Site S. No buildings with potentially complete vapor intrusion pathways were identified in Site O North, O South, Q South, or R. Therefore, no vapor intrusion sampling was conducted on these Sites. Vapor intrusion sampling was conducted in the buildings located in or near Sites O, Q North, Q Central, P and S which had potentially complete vapor intrusion pathways.

Flood Study

In 2011, at the request of EPA and Illinois EPA, the PRPs completed a flood study of Sauget Area 2 Sites R and Q (*Quantitative Analysis of Flood Velocities for Superfund Sites R and Q during the 100-Year Flooding Event*, CDG Engineers, April 2011). The study evaluated the effects of a 100-year flooding event at the Site, specifically at Sites Q and R, which are the only sites that border the Mississippi River. The 100-year flooding event was also analyzed to determine the potential for erosion.

The study concluded that during a 100-year flood event, maximum velocities calculated did not exceed 2 feet per second during the flooding event. Areas of potential concern during the 100-year flooding event include the fringes of a small sand stockpile in Site Q Central and the alluvial silts in the ephemeral ponds in Site Q South. Concerning the potential for erosion, the central portion of Site Q (Q Central) is shown to be stable due to the presence of the compacted crushed limestone covering most of this portion of Site Q. The majority of Site R was above the water surface profile for the 100-year flooding event.

2.5.5 - Sources of Contamination

The contaminant source areas at the Sauget Area 2 Site are the disposal areas at Sites O, O North, Q South, P, Q North, Q Central, Q South, R, and S. These disposal areas contain

municipal and industrial waste materials, including crushed or partially crushed drums, drum fragments, construction debris, and miscellaneous trash.

Based on the nature and extent of source areas at the Sauget Area 2 Site, the following were identified as potential routes of contaminant migration:

- Leaching of source materials to groundwater;
- Groundwater flow and discharge to the Mississippi River and GMCS;
- Volatilization of source materials to ambient air and to indoor air where buildings are present; and
- Erosion and release of source materials

Leaching to Groundwater

The potential for the source material at the various sites to leach to the groundwater has been based upon the leachability of the source material, the age and relative amount of leaching that has already occurred, and the surface cover. The source material observed in the Sauget Area 2 Sites generally consists of constituents that are relatively leachable. However, due to the age of waste material and the presence of clay layers, and based on the observed analytical concentrations in the soil, waste, and upper groundwater samples, wastes present at Sites O, P, Q Central, Q South, and S are contributing a minor degree of constituent migration from the sites into the underlying aquifer. There is most likely constituent migration from Sites Q North and R into the underlying aquifer; however, groundwater from Sites Q North and R is captured by the GMCS.

Groundwater Flow

The groundwater flow to the Mississippi River and to the GMCS has been extensively studied and modeled. In addition, the effectiveness of the GMCS has been monitored on a semi-annual basis since the remedy was installed. The surface water samples collected during the semi-annual sampling events that have been conducted since the GMCS became operational indicate reduced concentrations of the five indicator constituents in surface water when compared to 2002 data. This trend indicates the barrier wall is capturing 98 percent of mass flux from impacted groundwater from the Sauget Area 2 Sites and 94 percent of the total plume mass flux from Sauget Area 1, Sauget Area 2, Clayton Chemical, and the W. G. Krummrich facility which would have migrated into the Mississippi River without the GMCS.

Volatilization

Volatile constituents present in the subsurface of the sites may potentially volatilize to ambient air or, where buildings are present, to the indoor air of overlying buildings (i.e., vapor intrusion). The potential for constituents to volatilize from soil or groundwater to ambient air is dependent on soil characteristics (i.e., soil type, fraction of organic carbon), the depth of the constituents, and the presence of low permeability caps, which would limit volatilization. The potential for constituents to volatilize to indoor air is dependent on soil type as well as the characteristics of the building in question (i.e., size, air exchange rate). Under the current exposure scenario, vapor intrusion is a potentially complete pathway only where buildings are present. No buildings with potentially complete vapor intrusion pathways were identified in Site O North, O South, Q South, or R.

Erosion

Significant erosion will only result from flooding by the Mississippi River. Sites O, P, and S are protected by the Mississippi River levee system and no indications of erosion and release events due to flooding of the Mississippi River were observed on historic aerial photographs of Sites O, P, and S. Sites Q and R are located within the Mississippi River floodway. Portions of Site Q and R have been flooded on multiple occasions. In 2011, at the request of EPA and Illinois EPA, the PRPs completed a flood study of Saugeat Area 2 Sites R and Q (*Quantitative Analysis of Flood Velocities for Superfund Sites R and Q during the 100-Year Flooding Event*, CDG Engineers, April 2011). The study conclusions are discussed above in the Section 2.5.4.

2.5.6 - Types of Contaminants and Affected Media

Various investigations have been conducted to determine the nature and extent of contamination present in various media including surface soil, subsurface soil/waste, groundwater, surface water/sediment, leachate, and air at the Sites. Nature and extent of contamination for soils and waste at the Saugeat Area 2 Sites are defined based on: 1.) five indicator constituents (benzene, chlorobenzene, 1,4-dichlorobenzene, 2,4-dichlorophenol, and p-chloroaniline); 2.) constituents with concentrations greater than Illinois EPA's Tiered Approach to Corrective Action Objectives (TACO) Class I Groundwater Standards in the uppermost groundwater; and 3.) constituents with concentrations greater than 100 times Illinois EPA's TACO Class I Protection of Groundwater Soil Remediation Objectives (SROs). Indicators of potential impacts to groundwater were defined as the presence of constituents in soil at concentrations greater than 100 times Illinois TACO concentrations. The five indicator constituents were chosen because they were the most widely distributed constituents with the highest concentrations in the groundwater.

In addition to the five indicator constituents, PCBs and dioxins were also sampled for during the RI. PCB and dioxin sample results are summarized below in Tables 2 and 3, respectively.

Table 2: Minimum and Maximum PCB Concentrations in Surface and Subsurface Soil and Wastes				
Site	Surface Soil (ppm)		Subsurface (ppm)	
	Min	Max	Min	Max
O	0	300	0	990
P	0	2.2	0	9.6
Q North	0	0.92	0	90
Q Central	0	0.53	0	1.7
Q South	0	5.6	0	10
R	0	0	0	130
S	0	370	0	20

Table 3: Minimum and Maximum Dioxin Concentrations in Surface and Subsurface Soil and Wastes				
Site	Surface Soil (ppb)		Subsurface (ppb)	
	Min	Max	Min	Max
O	0.16	1.9	1.9	10
P	0	0	1.5	68
Q North	0.33	0.33	1.4	1.4
Q Central	0.48	0.48	1.0	1.0
Q South	0.35	1.4	1.1	1.8
R	--	--	2.8	330
S	0.15	0.15	0.7	20

The detection of indicator constituents for Sites O, P, Q, R, and S are summarized below in Tables 4 through 16.

2.5.7 - Extent of Contamination

The following summarizes the extent of remaining contamination at the Site:

Disposal Area Waste Characterization

Disposal area waste characterization investigations completed during the RI included soil gas and magnetometer surveys, installation of test trenches and borings, and waste characterization samples. Waste materials encountered at Sites O, P, Q, R, and S consisted of municipal and industrial waste materials, construction debris, and miscellaneous trash. All four boundaries of Sites O, P, Q, R, and S identified by aerial photo analysis were confirmed by soil gas surveys (VOCs detected inside the boundaries but not outside) and by boundary trenching.

Soil and waste characterization results for each of the sites are summarized below:

Site O

Surface Soil - Benzene, chlorobenzene, ethylbenzene, and pentachlorophenol were found in samples at levels that exceeded 100 times the TACO SROs, which is summarized in Table 4 below. At Site O North, benzene, chlorobenzene, 2,4,6-trichlorophenol, tetrachloroethene, and pentachlorophenol were found in samples that exceeded 100 times the TACO SROs. At Site O South, the only constituent that exceeded 100 times the TACO SRO was pentachlorophenol and only at one location.

Table 4- Site O: Maximum, Minimum and Mean Concentrations of Indicator Constituents in Surface Soil and Wastes

Indicator Constituents	Units	No. of Detects	No. of Samples	Min Conc	Max Conc	Avg Conc	IEPA TACO Class I SROs	100X IEPA TACO Class I SROs
Benzene	µg/kg	7	11	1.1	1,100	243	30	3,000
Chlorobenzene	µg/kg	4	11	4.7	14,000	4,956	1,000	100,000
1,4-Dichlorobenzene	µg/kg	3	11	46	630	265	2000	200,000
2,4-Dichlorophenol	µg/kg	3	11	35	940	385	1,000	100,000
P-Chloroaniline	µg/kg	1	11	77	77	77	700	70,000
2,4,6-Trichlorophenol	µg/kg	2	11	160	1,300	730	200	20,000
Ethylbenzene	µg/kg	7	11	0.38	4,400	815	13,000	1,300,000
Pentachlorophenol	µg/kg	11	11	13	480,000	46,424	30	3,000
Tetrachloroethene	µg/kg	4	11	1	290	116	60	6,000

Subsurface Soil and Waste – Constituents that exceeded TACO SROs and 100 times the TACO SROs at Site O in subsurface soil and wastes are summarized in Table 5 below. The estimated volume of waste and soil that exceeded the TACO SROs at Sites O, O North, and O South was calculated to be approximately 50,000 cubic yards¹¹.

Table 5- Site O: Maximum, Minimum and Mean Concentrations of Indicator Constituents in Subsurface Soil and Wastes

Chemical	Units	No. of Detects	No. of Samples	Min Conc	Max Conc	Avg Conc	IEPA TACO Class I SROs	100X IEPA TACO Class I SROs
Benzene	µg/kg	13	16	1.5	500,000	58,481	30	3,000
Chlorobenzene	µg/kg	13	16	65	760,000	218,520	1,000	100,000
1,4-	µg/kg	9	15	1,800	180,000	58,433	2000	200,000

¹¹ The estimated volume of waste and soil that exceeded the TACO SROs is calculated based on average depth of fill material and surface area exceeding TACO SROs.

Table 5- Site O: Maximum, Minimum and Mean Concentrations of Indicator Constituents in Subsurface Soil and Wastes

Chemical	Units	No. of Detects	No. of Samples	Min Conc	Max Conc	Avg Conc	IEPA TACO Class I SROs	100X IEPA TACO Class I SROs
Dichlorobenzene								
2,4-Dichlorophenol	µg/kg	5	15	4,400	33,000	16,280	1,000	100,000
P-Chloroaniline	µg/kg	4	15	63	5,800	1,862	700	70,000
2,4,6-Trichlorophenol	µg/kg	8	15	1,100	61,000	14,338	200	20,000
Ethylbenzene	µg/kg	14	16	1.1	2,800,000	375,555	13,000	1,300,000
Pentachlorophenol	µg/kg	7	16	2,900	7,900,000	1,941,843	30	3,000
Tetrachloroethene	µg/kg	3	16	2,400	6,800	4,067	60	6,000

Leaching to Groundwater- At Sites O, O North, and O South, the analytical results indicate minimal leaching is occurring to the shallow hydraulic unit (SHU) from the waste due to the following:

- The surface of Site O consisted of an approximately 3.5 foot thick clay cover. Additionally, clay layer beneath the site, with a minimum thickness of one foot is present underlying most of the observed waste or shallow subsurface material at Sites O, O North, and O South. The clay cover and the clay layer under the waste act as a deterrent to leaching.
- Concentrations of uppermost groundwater from potential source areas and immediately downgradient of Sites O, O North, and O South were not indicative of a significant source.
- Shallow groundwater concentrations are two to three orders of magnitude lower than leachate concentrations.

The amount of migration into the groundwater system from Site O is minimal. In addition, the regional groundwater flow and transport model indicate that the plumes in the MHU and DHU under Site O are captured by the GMCS.

Vapor - No buildings with potentially complete vapor intrusion pathways were identified on Site O. No occupied or nearby buildings were present at Site O North; therefore, the vapor intrusion pathway was incomplete at Site O North.

Erosion- Site O is located on the east side (dry side) of the levee. Therefore, the potential for Site O to be affected by a flood event that could result in the erosion and release of the source material is controlled.

Principal Threat Wastes- No NAPL or buried drums were observed at Site O, O North, or O South, as documented in the Principal Threat Wastes Technical Memorandum (URS, 2008b).

Site P

Surface Soil - Surface soil exceedances of the TACO SROs were found only at one sample location, in which P-chloroaniline exceeded the TACO SRO and tetrachloroethene exceeded 100 times the TACO SRO, as summarized in Table 6.

Table 6- Site P: Maximum, Minimum and Mean Concentrations of Indicator Constituents in Surface Soil and Wastes								
Chemical	Units	No. of Detects	No. of Samples	Min Conc	Max Conc	Avg Conc	IEPA TACO Class I SROs	100X IEPA TACO Class I SROs
Benzene	µg/kg	5	10	0.92	9.4	4.7	30	3,000
Chlorobenzene	µg/kg	4	11	3	540	138	1,000	100,000
1,4-Dichlorobenzene	µg/kg	0	11	--	--	--	2000	200,000
2,4-Dichlorophenol	µg/kg	0	11	--	--	--	1,000	100,000
P-Chloroaniline	µg/kg	1	11	21,000	21,000	21,000	700	70,000
Ethylbenzene	µg/kg	6	11	0.26	800	136	13,000	1,300,000
Tetrachloroethene	µg/kg	5	11	1.9	59,000	11,803	60	6,000

Subsurface Soil and Waste—Chlorobenzene, 1,4-dichlorobenzene, 2,4-dichlorophenol, p-chloroaniline, and ethylbenzene exceeded the TACO SROs, and benzene and tetrachloroethene exceeded 100 times the TACO SROs in subsurface soil and waste at Site P.

Based on the average depth of the bottom of fill material and the surface area exceeding TACO SROs at Site P, the estimated volume of waste and soil that exceeded the TACO SROs at Site P was calculated to be approximately 102,000 cubic yards.

Table 7- Site P: Maximum, Minimum and Mean Concentrations of Indicator Constituents in Subsurface Soil and Wastes

Chemical	Units	No. of Defect s	No. of Sample s	Min Con c	Max Conc	Avg Conc	IEPA TAC O Class I SROs	100X IEPA TACO Class I SROs
Benzene	µg/kg	16	20	4.3	14,000	1,571	30	3,000
Chlorobenzene	µg/kg	18	20	3.8	5,500	1,248	1,000	100,000
1,4-Dichlorobenzene	µg/kg	9	20	33	160,000	29,915	2000	200,000
2,4-Dichlorophenol	µg/kg	2	20	300	16,000	8,150	1,000	100,000
P-Chloroaniline	µg/kg	5	20	220	15,000	3,462	700	70,000
Ethylbenzene	µg/kg	20	20	1.7	200,000	16,733	13,000	1,300,000
Tetrachloroethene	µg/kg	12	20	11	140,000	12,393	60	6,000

Leaching to Groundwater - At Site P, the analytical results from the RI indicated minimal leaching to the SHU from the waste is occurring. Area conditions include:

- A clay layer beneath the waste material with a minimum thickness of 1.5 feet is present over portions of the site.
- There were no exceedances of TACO GROs in the uppermost groundwater or in the MHU at Site P.
- The shallow groundwater concentrations were two to three orders of magnitude lower than the leachate concentrations.

Groundwater contamination in the DHU originates from upgradient sources (W.G. Krummrich Facility) and extends downgradient of Site P. This contamination in the DHU is migrating under Site P. Groundwater contamination in the shallow aquifer at Site P is significantly lower than groundwater contamination in the deeper aquifer, indicating the DHU contamination did not come from the SHU at Site P.

Vapor - One building with a potentially complete vapor intrusion pathway was identified at Site P. This building, PT's Adult Entertainment, was sampled and evaluated in the Vapor Intrusion HHRA.

Erosion - Site P is located on the east side (dry side) of the levee; therefore, the potential for Site P to be effected by a Mississippi River flood event that could result in the erosion and release of the source material is controlled.

Principal Threat Wastes - NAPL was identified as principal threat waste at two locations within Site P. These two locations included one test trench location (AT-P-4) and one leachate well (LEACH-P-1).

Site Q North

Surface Soil - Minimal surface soil impact was found at Site Q North. Surface soil exceedances of the TACO SROs for benzene and 2,4-dichlorophenol were found in samples from Site Q North in two of fourteen locations. There were no constituent values that exceeded 100 times the TACO SROs in surface soils at Site Q North, as summarized in Table 8.

Table 8- Site Q North: Maximum, Minimum and Mean Concentrations of Indicator Constituents in Surface Soil and Wastes

Chemical	Units	No. of Detects	No. of Samples	Min Conc	Max Conc	Avg Conc	IEPA TACO Class I SROs	100X IEPA TACO Class I SROs
Benzene	µg/kg	5	11	0.76	500	101	30	3,000
Chlorobenzene	µg/kg	2	11	0.52	2.4	1.5	1,000	100,000
1,4-Dichlorobenzene	µg/kg	2	11	170	630	400	2000	200,000
2,4-Dichlorophenol	µg/kg	1	11	1,000	1,000	1,000	1,000	100,000
P-Chloroaniline	µg/kg	0	11	--	--	--	700	70,000
Tetrachloroethene	µg/kg	5	11	0.44	11	3.6	60	6,000

Subsurface Soil and Waste - Exceedances of the TACO SROs in the subsurface soil and waste samples were found at Site Q North for chlorobenzene, 1,4-dichlorobenzene, and p-chloroaniline. One location had constituents that exceeded 100 times the TACO SROs for benzene, 2,4-dichlorophenol, 2,4,6-trichlorophenol, and tetrachloroethene. The waste concentrations at Site Q North dogleg were one to two orders of magnitude higher than the remaining southern portion of Site Q North.

Based on the average depth of fill material and the surface area exceedances of the TACO SROs at Site Q North, the estimated volume of soil and waste that exceeded the TACO SROs at Site Q North was calculated to be 161,000 cubic yards.

Table 9- Site Q North: Maximum, Minimum and Mean Concentrations of Indicator Constituents in Subsurface Soil and Wastes

Chemical	Units	No. of Defects	No. of Samples	Min Conc	Max Conc	Avg Conc	IEPA TACO Class I SROs	100X IEPA TACO Class I SROs
Benzene	µg/kg	18	25	0.76	8,800	579	30	3,000
Chlorobenzene	µg/kg	14	24	1.6	36,000	5,525	1,000	100,000
1,4-Dichlorobenzene	µg/kg	4	25	270	3,200	1,843	2000	200,000
2,4-Dichlorophenol	µg/kg	4	25	30	270,000	84,483	1,000	100,000
P-Chloroaniline	µg/kg	6	25	43	30,000	10,788	700	70,000
2,4,6-Trichlorophenol	µg/kg	2	25	1,400	47,000	24,200	200	20,000
Tetrachloroethene	µg/kg	11	25	0.43	28,000	2,649	60	6,000

Leaching to Groundwater – The groundwater analytical results from the uppermost aquifer at Site Q North indicate that in both the dogleg portion and near the southern boundary of Site R, leaching to the SHU from the waste was occurring; however, minimal leaching is occurring in the southern portion of the site. The waste concentrations at Site Q North dogleg were one to four orders of magnitude higher than in the remaining southern portion of Site Q North. In addition, the regional groundwater flow and transport model indicate that the plumes in the SHU, MHU, and DHU under Site Q North are captured by the GMCS.

Vapor – Four buildings with potentially complete vapor intrusion pathways were identified at Site Q North. These four locations were the River City Landscape Supply (RCSL) warehouse, Eagle Marine Industries (EMI) office trailer, ConAgra maintenance building, and the ConAgra warehouse. All four locations were sampled and evaluated in the Vapor Intrusion HHRA.

Erosion – Site Q (Site Q North, Q Central, and Q South) is covered with crushed gravel and asphalt, which minimizes the impact of erosion due to surface run-off. Approximately 2,580 feet of the Mississippi River bank adjacent to Site Q is protected by riprap armor. The riprap cover on the southern most portion approximately 470 feet of the Mississippi River bank adjacent to Site Q thins-out and is less dense. At the southern end of Site Q Central, at the barge construction area, approximately 360 feet of the Mississippi River bank is covered in approximately 3.5 feet of compacted rock.

The Mississippi River has flooded a portion of Site Q several times during recent years, reportedly causing scouring and erosion at parts of the site, and ultimately leading to EPA Removal Actions (Ecology & Environment, 1995; Ecology & Environment, 2000). Site Q has flooded recently in 1977, 1987, 1993, and 1995 (EPA, December 1998).

Improvements since the last flood include buildings, parking lots, and, approximately 2,580 feet of bank riprap. This history suggests that future erosion due to flooding is possible. The 2011 flood study concluded that during a 100-year flood event maximum velocities calculated did not exceed 2 feet per second. Areas of potential concern during the 100-year flooding event include the fringes of a small sand stockpile in Site Q Central and the alluvial silts in the ephemeral ponds in Site Q South.

Principal Threat Wastes - NAPL was identified as principal threat waste at four locations within Site Q North. NAPL from Site Q North is captured and treated by the GMCS.

Site Q Central

Surface Soil – The surface material at Site Q Central generally consists of crushed rock, mulch, and black cinders averaging approximately 1.4 feet in thickness. There were no surface soil constituents that exceeded the TACO SROs at Site Q Central, as summarized in Table 10 below.

Table 10- Site Q Central: Maximum, Minimum and Mean Concentrations of Indicator Constituents in Surface Soil and Wastes

Chemical	Units	No. of Detects	No. of Samples	Min Conc	Max Conc	Avg Conc	IEPA TACO Class I SROs	100X IEPA TACO Class I SROs
Benzene	µg/kg	10	19	0.93	12	3.0	30	3,000
Chlorobenzene	µg/kg	5	19	1.3	220	53	1,000	100,000
1,4-Dichlorobenzene	µg/kg	3	19	45	320	168	2000	200,000
2,4-Dichlorophenol	µg/kg	0	19	--	--	--	1,000	100,000
P-Chloroaniline	µg/kg	0	19	--	--	--	700	70,000
Ethylbenzene	µg/kg	5	11	0.19	740	149	13,000	1,300,000

Subsurface Soil and Waste - A total of 20 trenches were excavated and 15 soil borings were advanced (of which six were converted to monitoring wells) at Site Q Central. Municipal waste and debris was encountered at these sample locations and found throughout the site. Industrial waste and impacted soil was also identified. In seven of twenty locations in Site Q Central subsurface soil and waste exceeded the TACO SROs for benzene, 1,4-dichlorobenzene, p-chloroaniline, and ethylbenzene, as summarized in Table 11. One location exceeded 100 times the TACO SROs for chlorobenzene. The estimated volume of soil and waste that exceeded the TACO SROs in Site Q Central is 296,000 cubic yards.

Table 11- Site Q Central: Maximum, Minimum and Mean Concentrations of Indicator Constituents in Subsurface Soil and Wastes

Chemical	Units	No. of Detects	No. of Samples	Min Conc	Max Conc	Avg Conc	IEPA TACO Class I SROs	100X IEPA TACO Class I SROs
Benzene	µg/kg	15	25	1.1	1,300	143	30	3,000
Chlorobenzene	µg/kg	15	26	7.6	240,000	21,333	1,000	100,000
1,4-Dichlorobenzene	µg/kg	11	26	100	24,000	3,455	2000	200,000
2,4-Dichlorophenol	µg/kg	1	25	400	400	400	1,000	100,000
P-Chloroaniline	µg/kg	1	25	1,100	1,100	1,100	700	70,000
Ethylbenzene	µg/kg	13	25	1.2	130,000	11,138	13,000	1,300,000

Leaching to Groundwater—RI results indicate minimal leaching of waste contaminants to the SHU is occurring. However, two locations within the southwestern portion of Site Q Central had detections above the TACO GROs for benzene, chlorobenzene, and p-chloroaniline.

Two groundwater plumes are present in the aquifer under Sites Q Central, which reach the Mississippi River at low level concentrations. These plumes are not captured by the GMCS.

Vapor—Five buildings with potentially complete vapor intrusion pathways were identified at Site Q Central. These buildings were sampled and evaluated in the Vapor Intrusion HHRA.

Erosion—See the above Site Q North erosion discussion about erosion at Site Q.

Principal Threat Wastes—No principal threat waste was observed at Site Q Central, as documented in the Principal Threat Wastes Technical Memorandum (URS, 2008b).

Site Q South

Surface Soil—Only tetrachloroethene exceeded the TACO SRO at Site Q South in surface soil. No indicator constituents exceeded 100 times the TACO SROs at Site Q South.

Table 12- Site Q South: Maximum, Minimum and Mean Concentrations of Indicator Constituents in Surface Soil and Wastes

Chemical	Units	No. of Detects	No. of Samples	Min Conc	Max Conc	Avg Conc	IEPA TACO Class I SROs	100X IEPA TACO Class I SROs
Benzene	µg/kg	13	24	1.1	10	3.6	30	3,000
Chlorobenzene	µg/kg	7	24	0.36	45	8.8	1,000	100,000
1,4-Dichlorobenzene	µg/kg	2	24	82	430	256	2000	200,000
2,4-Dichlorophenol	µg/kg	0	24	--	--	--	1,000	100,000
P-Chloroaniline	µg/kg	1	24	330	330	330	700	70,000
Tetrachloroethene	µg/kg	9	24	0.6	1,700	211	60	6,000

Subsurface Soil and Waste - Benzene and chlorobenzene were above TACO SROs at Site Q South, and tetrachloroethene and toluene were above 100 times the TACO SROs at Site Q South. The estimated volume of soil and waste that exceeded the TACO SROs at Site Q South is 60,000 cubic yards.

Table 13- Site Q South: Maximum, Minimum and Mean Concentrations of Indicator Constituents in Subsurface Soil and Wastes

Chemical	Units	No. of Detects	No. of Samples	Min Conc	Max Conc	Avg Conc	IEPA TACO Class I SROs	100X IEPA TACO Class I SROs
Benzene	µg/kg	15	21	0.62	2,000	184	30	3,000
Chlorobenzene	µg/kg	9	21	0.58	3,500	655	1,000	100,000
1,4-Dichlorobenzene	µg/kg	4	21	52	1,200	375	2000	200,000
2,4-Dichlorophenol	µg/kg	1	21	100	100	100	1,000	100,000
P-Chloroaniline	µg/kg	1	21	160	160	160	700	70,000
Tetrachloroethene	µg/kg	9	24	0.76	8,800	624	60	6,000
Toluene	µg/kg	14	21	2	1,300,000	92,912	12,000	1,200,000

Leaching to Groundwater – The RI results indicate that leaching is occurring from Site Q South to the SHU. At two locations in uppermost groundwater within Site Q South contaminant concentrations were found above TACO GROs.

A contaminated groundwater plume is present in both the MHU and the DHU at Site Q South. This plume originates from Site Q South near the boundary with Site Q Central and extends to locations in the southwestern portion of the Site Q Central. This plume reaches the Mississippi River at low level concentrations. NAPL was not identified at Site Q South; however, intact drums were identified in test trench locations.

Vapor - No buildings with potentially complete vapor intrusion pathways were identified at Site Q South.

Erosion - See the above Site Q North erosion discussion about erosion at Site Q. Additionally, the majority of the site is covered with thick vegetation, which minimizes the impact of erosion due to surface run-off.

Principal Threat Wastes - The presence of NAPL and buried drums was evaluated at Site Q South to assess the presence of principal threat wastes. Two intact drums were found near AT-Q-35 in Site Q South and potential NAPL leaked into the trench from one of the drums. Since the drums were found in close proximity to each other, both were considered to contain liquid and be principal threat waste. Three step-out trenches from AT-Q 35 were then excavated. Two step-out trenches to the west of AT-Q-35 at distances of 50 (TT-Q-35-W-1) and 100 (TT-Q-35-W-2) feet uncovered no intact drums, but did uncover metal drum remnants and fragments and industrial waste in TT-Q-35-W-1. The step-out process was continued. No metal drums or drum fragments or industrial waste were observed in TT-Q-35-W-2; therefore, further step-out trenches to the west were not excavated. One step-out trench was excavated to the north of AT-Q-35 at a distance of 50 (TTQ-35-N-1) feet. Approximately four metal drum remnants and fragments were observed in TT-Q-35-N-1 and no intact metal drums were found. The density of drum remnants was not as significant as AT-Q-35; therefore, further step-out trenches to the north were not excavated. Based on these observations, the area estimated to contain principal threat drummed waste at AT-Q-35 is approximately 100 square feet.

Site Q South Ponds

Sediments – There were no detections of the five indicator constituents in the pond sediments during the RI samplings.

Surface Water – Low concentrations of benzene were present in the surface water samples collected from the Site Q South Ponds. There were no detections of chlorobenzene, 1,4-dichlorobenzene, 2,4-dichlorophenol, and p-chloroaniline.

Site R

Surface Soil - 1,4-dichlorobenzene and p-chloroaniline were found above the TACO SROs at Site R. Benzene, chlorobenzene, 2,4-dichlorophenol, 2,4-D, 2,4,6-trichlorophenol, and nitrobenzene were found above 100 times the TACO SROs. Based on these analytical results the entire site was assumed to exceed the TACO SROs.

Table 14- Site R: Maximum, Minimum and Mean Concentrations of Indicator Constituents in Surface Soil and Wastes

Chemical	Units	No. of Detects	No. of Samples	Min Conc	Max Conc	Avg Conc	IEPA TACO Class I SROs	100X IEPA TACO Class I SROs
Benzene	µg/kg	4	4	0.68	2.1	1.4	30	3,000
Chlorobenzene	µg/kg	3	4	1.8	64	23	1,000	100,000
1,4-Dichlorobenzene	µg/kg	0	4	--	--	--	2000	200,000
2,4-Dichlorophenol	µg/kg	0	4	--	--	--	1,000	100,000
P-Chloroaniline	µg/kg	0	4	--	--	--	700	70,000
2,4-D	µg/kg	1	4	55	55	55	1,500	150,000

Subsurface Soil and Waste - 1,4-dichlorobenzene and p-chloroaniline were found above the TACO SROs at Site R. Benzene, chlorobenzene, 2,4-dichlorophenol, 2,4-D, 2,4,6-trichlorophenol, and nitrobenzene were found above 100 times the TACO SROs.

Table 15- Site R: Maximum, Minimum and Mean Concentrations of Indicator Constituents in Subsurface Soil and Wastes

Chemical	Units	No. of Detects	No. of Samples	Min Conc	Max Conc	Avg Conc	IEPA TACO Class I SROs	100X IEPA TACO Class I SROs
Benzene	µg/kg	8	8	1.6	150,000	39,279	30	3,000
Chlorobenzene	µg/kg	8	8	1.4	2,400,000	349,757	1,000	100,000
1,4-Dichlorobenzene	µg/kg	3	8	580	24,000	8,727	2000	200,000
2,4-Dichlorophenol	µg/kg	6	8	30	3,500,000	654,720	1,000	100,000
P-Chloroaniline	µg/kg	6	8	49	36,000	14,255	700	70,000
2,4,6-Trichlorophenol	µg/kg	5	8	100	650,000	176,020	200	20,000
2,4-D	µg/kg	7	8	270	580,000	115,824	1,500	150,000
Nitrobenzene	µg/kg	3	8	1,100	48,000	25,367	100	10,000

Leaching to Groundwater – The conceptual site model for contaminant fate and transport for Site R was based on site history, source material, and migration pathways. The groundwater under Site R is impacted throughout the vertical extent of the aquifer from both on-site and off-site sources. Analytical data indicates that waste from Site R is leaching into the shallow aquifer. The contaminated groundwater under Site R moves to the west, combines with the other upgradient sources (e.g., Sauget Area 1 and 2 sites, former Clayton facility and Krummrich plant), and is intercepted by the GMCS downgradient of Site R. As stated in the regional groundwater model, when all modeled constituents were included, over 94% of the total plume mass flux (mass discharge rate) is predicted to be captured and treated by the GMCS/ABRFT. For Sauget Area 2 sources only, when all modeled constituents are included, 98% of the total plume mass flux is predicted to be captured and treated by the GMCS/ABRFT.

Vapor – No buildings with potentially complete vapor intrusion pathways were identified at Site R.

Erosion – The 2011 flood study concluded that during a 100-year flood event maximum velocities calculated did not exceed 2 feet per second. The majority of Site R was above the water surface profile for the 100-year flooding event.

Principal Threat Wastes – NAPL was identified as principal threat waste at eight soil boring locations in Site R. The NAPL observed in Site R is considered a principal threat waste; however, these locations are already captured and treated by the GMCS/ABRFT. In addition, materials present in Site R leachate (LEACH-R-1) pose a potential risk in excess of EPA's principal threat waste threshold risk level of 1×10^{-3} and, therefore, is identified as principal threat wastes.

Site S

Surface Soil – 1,4-dichlorobenzene and 2,4-dichlorophenol were found above the TACO SROs in surface soil at Site S. No constituents exceeded 100 times TACO SROs.

Table 16- Site S: Maximum, Minimum and Mean Concentrations of Indicator Constituents in Surface Soil and Wastes

Chemical	Units	No. of Detects	No. of Samples	Min Conc	Max Conc	Avg Conc	IEPA TACO Class I SROs	100X IEPA TACO Class I SROs
Benzene	µg/kg	2	4	1.4	1.5	1.5	30	3,000
Chlorobenzene	µg/kg	1	4	0.47	0.47	0.47	1,000	100,000
1,4-Dichlorobenzene	µg/kg	1	4	7,500	7,500	7,500	2000	200,000
2,4-Dichlorophenol	µg/kg	1	4	2,300	2,300	2,300	1,000	100,000

Table 16- Site S: Maximum, Minimum and Mean Concentrations of Indicator Constituents in Surface Soil and Wastes

Chemical	Units	No. of Detects	No. of Samples	Min Conc	Max Conc	Avg Conc	IEPA TACO Class I SROs	100X IEPA TACO Class I SROs
P-Chloroaniline	µg/kg	0	4	--	--	--	700	70,000
1,1,1-Trichloroethane	µg/kg	1	4	6.6	6.6	6.6	2,000	200,000
Tetrachloroethene	µg/kg	3	4	0.83	3	2.1	60	6,000
Toluene	µg/kg	2	4	6.2	30	18	12,000	1,200,000

Subsurface Soil and Waste- Contaminant concentrations in subsurface soil and waste samples were found above TACO SROs in all four Site S locations. Benzene, chlorobenzene, 1,4-dichlorobenzene, p-chloroaniline, 1,1,1-trichloroethane, dichloromethane, tetrachloroethene, toluene, and trichloroethene were found above 100 times SROs. The estimated volume of soil and waste that exceeded the TACO SROs at Site S was calculated to be 8,000 cubic yards.

Table 17- Site S: Maximum, Minimum and Mean Concentrations of Indicator Constituents in Subsurface Soil and Wastes

Chemical	Units	No. of Detects	No. of Samples	Min Conc	Max Conc	Avg Conc	IEPA TACO Class I SROs	100X IEPA TACO Class I SROs
Benzene	µg/kg	3	7	2,400	35,000	23,800	30	3,000
Chlorobenzene	µg/kg	3	7	190	1,200,000	530,063	1,000	100,000
1,4-Dichlorobenzene	µg/kg	2	7	4,500	200,000	102,250	2000	200,000
2,4-Dichlorophenol	µg/kg	0	7	--	--	--	1,000	100,000
P-Chloroaniline	µg/kg	2	7	7,600	70,000	38,800	700	70,000
1,1,1-Trichloroethane	µg/kg	7	7	45	220,000	43,792	2,000	200,000
Dichloromethane	µg/kg	5	7	2,100	57,000	20,140	20	2,000

Leaching to Groundwater - While the soil and waste concentrations in Site S exceeded 100 times the TACO SROs at all locations, analytical results from the uppermost groundwater indicate leaching from the waste to the SHU is minimal based on:

- The surface soil at Site S consists of a low permeability silty-clay fill layer with a minimum thickness of one foot, which was present underlying most of the observed waste or shallow subsurface material at Site S.
- Only benzene is found above the TACO groundwater remediation objectives (GROs) in groundwater downgradient of Site S.
- The SHU and DHU plumes beneath Site S originate from an upgradient location and extend downgradient of Site S. Groundwater contaminant concentrations upgradient of Site S are higher in the SHU than downgradient concentrations. Groundwater impacts beneath and downgradient of Site S are found deep in the aquifer, with the concentrations in the shallow depths significantly lower or not detected.

Based on these observations, Site S soil and waste is not a significant on-going source contamination to the underlying aquifer. This is primarily due to the silty-clay layer observed beneath the waste material observed under most of Site S. Additionally, based on the regional groundwater flow and transport model, the plumes in the MHU and DHU under Site S are captured by the GMCS.

Vapor - No buildings with potentially complete vapor intrusion pathways were identified at Site S. However, the American Bottoms/Laboratory building is located approximately 175 feet east of Site S, and the Veolia hazardous waste storage buildings are located approximately 50 feet west of Site S. Therefore, these buildings were evaluated in the Vapor Intrusion HHRA.

Erosion - Site S is located on the east side (dry side) of the levee; therefore, the potential for Site S to be effected by a flood event that could result in the erosion and release of the source material is minimal. Additionally, all of the waste at Site S is covered, thereby reducing the risk of erosion caused by surface run-off.

Principal Threat Waste - No principal threat waste was observed at Site S, as documented in the Principal Threat Wastes Technical Memorandum (URS, 2008b).

Summary of Extent of Contamination

The contaminant source areas at Saugeat Area 2 are the disposal areas at Sites O, O North, O South, P, Q North, Q Central, Q South, Q South Ponds, R, and S. Principal threat waste was observed at Site P, Q North, Q South, and R. At Site P, NAPL was observed in Trench AT-P-4 and well LEACH P-1. At Site Q North, NAPL was observed at Sonic-5 and well LEACH-Q-1. At Site Q South, two intact drums were found from which NAPL may have leaked into the trench. At Site R, NAPL was observed at eight locations. The NAPL identified on Site Q North and Site R are captured and treated by the GMCS/ABRTF.

2.6 – Current and Potential Future Site and Resource Uses

The Sauget Area 2 Site has been used for industrial purposes for many years (since the 1930's or earlier). The sites within Sauget Area 2 are zoned commercial/industrial and it is likely that the sites will continue to be used well into the reasonably foreseeable future for commercial/industrial purposes.

Historically, groundwater from the American Bottoms aquifer was a major source of water for the area and was used for industrial, public, and irrigation purposes. Groundwater levels prior to industrial and urban development were near land surface. Intensive industrial groundwater withdrawal and use, and construction of a system of drainage ditches, levees, and canals to protect developed areas, lowered the groundwater elevation for many years. However, by the mid-1980s, the groundwater levels increased due to reduced pumpage, high river stages, and high precipitation.

Currently, no groundwater is being pumped from the American Bottoms aquifer in the vicinity of Sauget Area 2 for public, private, or industrial supply purposes. Groundwater is not a source of drinking water in the area. The Villages of Sauget and Cahokia have issued ordinances prohibiting the use of groundwater as a potable water source. These ordinances were issued in response to historic industrial use in the region and resulting groundwater quality impairments. Groundwater use restrictions will likely remain in place for the foreseeable future due to the extent of the groundwater quality impairments.

2.7 - Summary of Site Risks

2.7.1-- Summary of Human Health Risk Assessment

A human health risk assessment (HHRA) estimates what potential risks a site poses to human health if no action is taken. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. This section of the ROD summarizes the results of the HHRA for the Sauget Area 2 Site. Two HHRA's were conducted by the PRPs, with EPA oversight, the Site-wide HHRA (2009) and Vapor Intrusion HHRA (2009). The PRPs completed these Site-specific risk assessments to quantify the potential threat to public health from actual or threatened releases of hazardous substances into the environment. The HHRA's were prepared using EPA's Risk Assessment Guidance for Superfund (RAGS) and evaluated potential current and future exposure scenarios at the Site.

The objectives of the risk evaluation using the HHRA were : (1) to evaluate whether Site-related constituents detected in environmental media pose risks above EPA-acceptable levels for current and future human receptors, and (2) to support decisions concerning the need for further evaluation or action, based upon current and reasonably anticipated future land use. Future land uses were assumed to be the same as current land uses. Current land uses are commercial/industrial and the Sites will likely continue to be used well into the reasonable foreseeable future for commercial/industrial purposes. Therefore, the Sites were evaluated for non-residential use scenarios. Receptors were identified for the Sites based on the CSM for

human health and the COPCs identified in media at each site. The potential receptor groups considered included:

- Sites (O, P, Q, R and S)
 - Future indoor industrial worker
 - Future outdoor industrial workers
 - Future construction/ utility workers
 - Future trespassing teenagers
- Site Q South Ponds
 - Current and future trespassing teenager
 - Current and future recreational anglers

Two general types of health risk were characterized for each potential exposure pathway: potential carcinogenic risk (risk) and potential non-carcinogenic hazard (hazard). Risks and hazards were calculated using standard risk assessment methodologies. Risks were compared to EPA's acceptable risk range: from 1×10^{-6} (one excess cancer per one million exposed receptors) to 1×10^{-4} (one excess cancer per ten thousand exposed receptors). Risks less than 1×10^{-6} are considered insignificant. Risks within the above range are remediated at the discretion of EPA risk managers. Risks greater than 1×10^{-4} typically require remediation. Non-carcinogenic hazards are compared to a target hazard index (HI) of 1. The potential risks from the individual contaminants and exposure pathways are added up to calculate total Site risk.

The following provides a brief description of the various HHRA's conducted in the Sauget Area 1 Site:

- **Site-Wide HHRA:** PRPs conducted a Site-wide HHRA for the Sauget Area 2 Sites (HHRA, AECOM, 2009).
- **Vapor Intrusion HHRA:** PRPs conducted a Vapor Intrusion HHRA for the Sauget Area 2 Sites (VI HHRA, AECOM, 2008).

To guide identification of appropriate exposure pathways for the risk assessments, the PRPs, with EPA oversight, developed a CSM for human health (Figure 2) which presents source areas, potential migration pathways of contaminants from source areas to environmental media where exposure can occur, and potential human receptors. The CSM for human health was discussed in Section 2.5.1.

The CSM links contaminant concentrations in various media to potential human exposure and identified the following exposure scenarios for each site:

- Sites (O, P, Q, R and S)
 - Future indoor industrial worker - Potential exposure to COPCs via inhalation of volatile constituents present in indoor air due to vapor intrusion from the subsurface.
 - Future outdoor industrial workers - Potential exposure to COPCs in surface soil via: (1) incidental ingestion and dermal contact, (2) inhalation of non-volatile COPCs that may be suspended as dusts from surface soils, and (3) inhalation of COPCs that may volatilize into outdoor air from underlying groundwater and from soils (combined surface soil, subsurface soil, and waste).

- Future construction/ utility workers - Potential exposure to COPCs in soils (combined surface soil, subsurface soil, waste) via: (1) incidental ingestion and dermal contact, (2) inhalation of volatile emissions and particulates suspended during excavation activity, (3) incidental ingestions and dermal contact with COPCs in shallow groundwater and leachate, and (4) inhalation of COPCs volatilized from standing water in an excavation trench.
- Future trespassing teenagers - Potential exposure to COPCs in surface soils via: (1) incidental ingestion and dermal contact, (2) inhalation of non-volatile COPCs that may be suspended as dusts from surface soils, and (3) inhalation to COPCs that may volatilize into outdoor air from underlying groundwater and from soils (combined surface soil, subsurface soil, and waste).
- Site Q Ponds
 - Current and future trespassing teenager - Potential exposure to COPCs in surface water and sediment from the Site Q Ponds.
 - Current and future recreational anglers - Potential exposure to COPCs in surface water, sediment, and fish fillet from the Site Q Ponds.

Assumptions about exposure frequency, duration, and other exposure factors are discussed in more detail in the HHRAs.

2.7.2 - Data Quality and Usability

Data were evaluated based on completeness, holding times, initial and continuing calibrations, surrogate recoveries, internal standards, compound identification, laboratory and field quality assurance/quality control (QA/QC) procedures and results, reporting limits, documentation practices, and application of validation qualifiers. Analytical data collected during the RI and SI were considered to be acceptable for use in the HHRAs.

2.7.3 - Identification of Contaminants of Concern

For potentially carcinogenic risk results, COCs are identified as those COPCs that result in target risk above 1×10^{-4} . For noncarcinogenic hazard results, COCs are identified as those COPCs that result in toxic-endpoint specific HI greater than 1.

Tables 18 through 26 present the contaminants of concern (COCs) that pose potential threats to human health in the specified media for Sites O, P, Q, R, and S. The tables also identify the exposure point concentrations (EPCs), the concentration ranges, the detection frequency, and how the EPCs were derived. An EPC is an estimate of the true arithmetic mean concentration of a chemical in a medium at an exposure point and is discussed in Section 2.7.5.

2.7.4 - Exposure Assessment

The purpose of the exposure assessment is to predict the magnitude and frequency of potential human exposure to each of the COPCs retained for quantitative evaluation in the HHRA. The

first step in the exposure assessment is the characterization of the site setting and surrounding area. Current and potential future site uses and potential receptors (i.e., people who may contact the impacted environmental media of interest) are then identified. Potential exposure scenarios identifying appropriate environmental media and exposure pathways for current and potential future site uses and receptors are then developed. Those potential exposure pathways for which COPCs are identified and are judged to be complete are evaluated quantitatively in the risk assessment. The exposure pathways and receptors considered for evaluation at the Sauget Area 2 Site, along with the rationale for their inclusion in, or exclusion from, the quantitative risk assessment are described in the HHRA's.

Sauget Area 2 Sites have been used for industrial purposes for many years and use of these areas is expected to remain industrial. Therefore, the sites were evaluated for commercial/industrial use scenarios in the Site-wide HHRA (AECOM, 2009).

2.7.5 - Exposure Point Concentrations

Exposure points are located where potential receptors may contact COCs at or from the Site. The concentration of COCs in the environmental medium that receptors contact is called the Exposure Point Concentration (EPC) and is estimated. Both measured and modeled EPCs scenarios were developed. The approaches used to calculate EPCs under the two scenarios are presented in the HHRA. EPCs were calculated following the methods and recommendations provided in EPA's risk assessment guidance. A summary of the EPCs for COCs for the sites is provided in Tables 18 through 26.

Table 18 – Summary of Contaminants of Concern for Site O						
Exposure Point	COC	Concentration Detected ⁽¹⁾		Frequency of Detection ⁽²⁾	Exposure Point Concentration	Statistical Measure
		Min	Max			
Surface Soil	Dioxin TEQ-HH	6.37E-5	6.77E-3	2:2:2	6.77E-3	Max
Combined Soil	PCBs, Total	5.32E-2	2.98E+2	9:11:11	1.63E+2	95% UCL
<p>(1) Soil units – mg/kg (2) FOD - Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.</p> <p>COC – Contaminant of Concern Max – Maximum Detected Concentration Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration PCB - Polychlorinated Biphenyls 95% UCL – 95% Upper Confidence Limit</p>						

**Table 19 – Summary of Contaminants of Concern
for Site O North**

Exposure Point	COC	Concentration Detected ⁽¹⁾		Frequency of Detection ⁽²⁾	Exposure Point Concentration	Statistical Measure
		Min	Max			
Surface Soil	Dioxin TEQ-HH	5.15E-2	5.15E-2	1:1:1	5.15E-2	Max
	PCBs, Total	7.09E+2	7.09E+2	1:1:1	7.09E+2	Max
Combined Soil	Dioxin TEQ-HH	5.15E-2	6.08E-1	5:5:5	6.08E-1	Max
	PCBs, Total	5.98E-2	3.05E+3	6:6:6	3.05E+3	Max
Leachate	PCBs, Total	5.49E-2	5.49E-2	1:1:1	5.49E-2	Max
<p>(1) Soil units – mg/kg; Leachate units – mg/L</p> <p>(2) FOD - Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.</p> <p>COC – Contaminant of Concern Max – Maximum Detected Concentration PCB - Polychlorinated Biphenyls Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration</p>						

**Table 20 – Summary of Contaminants of Concern
for Site P**

Exposure Point	COC	Concentration Detected ⁽¹⁾		Frequency of Detection ⁽²⁾	Exposure Point Concentration	Statistical Measure
		Min	Max			
Combined Soil	PCBs, Total	5.19E-2	4.03E+2	16:20:20	1.22E+2	95% UCL
<p>(1) Soil units – mg/kg</p> <p>(2) FOD - Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.</p> <p>COC – Contaminant of Concern PCB - Polychlorinated Biphenyls 95% UCL – 95% Upper Confidence Limit</p>						

Table 21 – Summary of Contaminants of Concern for Site Q North						
Exposure Point	COC	Concentration Detected ⁽¹⁾		Frequency of Detection ⁽²⁾	Exposure Point Concentration	Statistical Measure
		Min	Max			
Combined Soil	Dioxin TEQ-HH	5.88E-5	6.78E-2	15:17:17	4.59E-2	95% UCL
	PCBs, Total	4.51E-1	2.21E+2	17:22:22	1.49E+2	95% UCL
	Lead	7.60E+0	2.40E+4	28:29:29	1.16E+3	Average
Leachate	2,4-DCP	9.80E+1	1.80E+2	5:5:5	1.80E+2	Max
	Lead	4.15E-1	2.80E+0	2:5:5	1.61E+0	Average
	PCP	5.00E-1	6.30E+0	4:5:5	6.30E+0	Max
	PCBs, Total	1.25E-3	4.79E-2	4:4:4	4.79E-2	Max
(1) Soil units – mg/kg (2) FOD - Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.				COC – Contaminant of Concern Max – Maximum Detected Concentration PCB - Polychlorinated Biphenyls Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration 95% UCL – 95% Upper Confidence Limit 2,4-DCP - 2,4-Dichlorophenol PCP - Pentachlorophenol		

Table 22 – Summary of Contaminants of Concern for Site Q Central						
Exposure Point	COC	Concentration Detected ⁽¹⁾		Frequency of Detection ⁽²⁾	Exposure Point Concentration	Statistical Measure
		Min	Max			
Surface Soil	Dioxin TEQ-HH	5.78E-5	3.87E-3	10:14:14	2.09E-3	95% UCL
(1) Soil units – mg/kg (2) FOD - Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.				COC – Contaminant of Concern Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration 95% UCL – 95% Upper Confidence Limit		

Table 23 – Summary of Contaminants of Concern for Site Q South						
Exposure Point	COC	Concentration Detected ⁽¹⁾		Frequency of Detection ⁽²⁾	Exposure Point Concentration	Statistical Measure
		Min	Max			
Surface Soil	Dioxin TEQ-HH	5.27E-5	7.11E-3	22:22:22	3.70E-3	95% UCL
	Cadmium	4.10E-1	8.00E+3	24:24:24	3.65E+3	95% UCL
Combined Soil	Cadmium	1.30E-1	8.00E+3	43:45:45	2.46E+3	95% UCL
<p>(1) Soil units – mg/kg (2) FOD - Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.</p> <p>COC – Contaminant of Concern Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration 95% UCL – 95% Upper Confidence Limit</p>						

Table 24 – Summary of Contaminants of Concern for Site Q South Ponds						
Exposure Point	COC	Concentration Detected ⁽¹⁾		Frequency of Detection ⁽²⁾	Exposure Point Concentration	Statistical Measure
		Min	Max			
Large Pond Fish	Black Bullhead					
	Dieldrin	1.00E-1	1.00E-1	1:1:1	1.00E-1	Max
	PCBs, Total	3.87E+0	3.87E+0	1:1:1	3.87E+0	Max
	Carp					
	Arsenic	8.20E-1	8.20E-1	1:1:1	8.20E-1	Max
	Benzo(a)pyrene	1.80E-1	1.80E-1	1:1:1	1.80E-1	Max
	Dieldrin	1.90E-1	1.90E-1	1:1:1	1.90E-1	Max
	Dioxin TEQ-HH	1.53E-5	1.53E-5	1:1:1	1.53E-5	Max
	PCBs, Total	1.00E+1	1.00E+1	1:1:1	1.00E+1	Max
Small Pond Surface Water	Benzo(a)pyrene	1.50E-3	4.60E-3	2:3:3	4.60E-3	Max
<p>(1) Fish units – mg/kg; Surface water units – mg/L (2) FOD - Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.</p> <p>COC – Contaminant of Concern Max – Maximum Detected Concentration PCB - Polychlorinated Biphenyls Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration</p>						

**Table 25 – Summary of Contaminants of Concern
for Site R**

Exposure Point	COC	Concentration Detected ⁽¹⁾		Frequency of Detection ⁽²⁾	Exposure Point Concentration	Statistical Measure
		Min	Max			
Combined Soil	Tetrachloroethene	2.60E-3	1.20E+3	10:12:12	7.64E+2	95% UCL
	PCBs, Total	7.91E-2	2.78E+2	8:12:12	9.53E+1	95% UCL
Leachate	Benzene	5.90E+0	1.47E+3	4:4:4	1.47E+3	Max
	Benzo(a)pyrene	1.80E-1	1.80E-1	1:4:4	1.80E-1	Max
	Benzo(b)fluoranthene	1.42E+1	1.42E+1	1:4:4	1.42E+1	Max
	Benzo(k)fluoranthene	2.00E-1	1.41E+1	2:4:4	1.41E+1	Max
	Chlorobenzene	1.10E+0	1.03E+3	4:4:4	1.03E+3	Max
	Chloroform	2.00E+0	3.07E+2	4:4:4	3.07E+2	Max
	Chloromethane	1.51E+2	1.51E+2	1:4:4	1.51E+2	Max
	Dibenzo(a,h)anthracene	1.90E-1	1.90E-1	1:4:4	1.90E-1	Max
	Dioxin TEQ-HH	1.53E-8	2.81E-6	3:4:4	2.81E-6	Max
	1,2,4-Trichlorobenzene	2.77E+1	2.77E+1	1:4:4	2.77E+1	Max
	1,2-Dichloroethane	4.70E+1	1.97E+3	4:4:4	1.97E+3	Max
	1,2-Dichloroethene (total)	1.30E+1	1.20E+3	4:4:4	1.20E+3	Max
	1,4-Dichlorobenzene	7.60E+0	3.77E+1	2:4:4	3.77E+1	Max
	2-Methylnaphthalene	8.20E-1	1.62E+1	2:4:4	1.62E+1	Max
	2,4-Dichlorophenol	5.20E-1	2.43E+1	3:4:4	2.43E+1	Max
	4-Chloroaniline	2.00E+1	5.39E+2	4:4:4	5.39E+2	Max
	4,4'-DDT	2.10E-1	8.20E-1	2:4:4	8.20E-1	Max
	Manganese	9.20E+1	2.50E+2	4:4:4	2.50E+2	Max
	MCPA	1.09E+3	1.09E+3	1:4:4	1.09E+3	Max
	Naphthalene	5.60E+0	5.60E+0	1:4:4	5.60E+0	Max
	PCBs, Total	4.06E+0	1.75E+2	4:4:4	1.75E+2	Max
	Tetrachloroethene	1.80E+1	6.87E+4	4:4:4	6.87E+4	Max
	Trichloroethene	1.00E+2	7.97E+4	4:4:4	7.97E+4	Max
	Toluene	1.60E+1	1.73E+4	4:4:4	1.73E+4	Max
	Xylenes, Total	4.70E-1	1.07E+3	3:4:4	1.07E+3	Max
<p>(1) Soil units – mg/kg; Leachate units – mg/L (2) FOD - Number of samples detected: Number of valid results (i.e., not rejected): Total number of samples.</p>						
<p>COC – Contaminant of Concern Max – Maximum Detected Concentration PCB - Polychlorinated Biphenyls Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration 95% UCL – 95% Upper Confidence Limit MCPA - 2-methyl-4-chlorophenoxyacetic acid</p>						

Table 26 – Summary of Contaminants of Concern for Site S						
Exposure Point	COC	Concentration Detected ⁽¹⁾		Frequency of Detection ⁽²⁾	Exposure Point Concentration	Statistical Measure
		Min	Max			
Surface Soil	PCBs, Total	1.38E-1	1.01E+3	2:2:2	1.01E+3	Max
Combined Soil	PCBs, Total	1.38E-1	1.01E+3	7:8:8	1.01E+3	Max
(1) Soil units – mg/kg (2) FOD - Number of samples detected: Number of valid results (i.e., not rejected); Total number of samples.				COC – Contaminant of Concern Max – Maximum Detected Concentration PCB - Polychlorinated Biphenyls		

2.7.6 - Toxicity Assessment

The toxicity assessment provides a description of the relationship between a dose of a chemical and the potential likelihood of an adverse health effect. The purpose of the toxicity assessment is to provide a quantitative estimate of the inherent toxicity of COCs for use in risk characterization. Potential health risks for COCs are evaluated for both carcinogenic and non-carcinogenic risks.

The purpose of the toxicity assessment is to assign toxicity values (criteria) to each contaminant evaluated in the risk assessment. The toxicity values are used in conjunction with the estimated doses to which a human could be exposed to evaluate the potential human health risk associated with each contaminant. In evaluating potential health risks, both carcinogenic and non-carcinogenic health effects were considered.

Cancer slope factors (CSFs) are developed by the EPA under the assumption that the risk of cancer from a given chemical is linearly related to dose. CSFs are developed from laboratory animal studies or human epidemiology studies and classified according to route of administration. The CSF is expressed as $(\text{mg/kg/day})^{-1}$ and when multiplied by the lifetime average daily dose expressed as mg/kg/day will provide an estimate of the probability that the dose will cause cancer during the lifetime of the exposed individual. Cancer toxicity data for the COCs are summarized in Appendix D, Table 1.

The toxicity criteria used to evaluate potential non-carcinogenic health effects are reference doses (RfDs). The RfD is expressed as mg/kg/day and represents that dose that has been determined by experimental animal tests or by human observation to not cause adverse health effects, even if the dose is continued for a lifetime. The procedure used to estimate this dose incorporates safety or uncertainty factors that assume it will not over-estimate this safe dose. Non-cancer toxicity data for the COCs are summarized in Appendix D, Table 2.

2.7.7 - Risk Characterization

For carcinogens, risks are generally expressed as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the carcinogen. Excess lifetime cancer risk is calculated from the following equation:

$$\text{Risk} = \text{CDI} \times \text{SF}$$

Where:

risk = a unit less probability (e.g., 2×10^{-5}) of an individual developing cancer

CDI = chronic daily intake averaged over 70 years (mg/kg-day)

SF = slope factor, expressed as (mg/kg-day)⁻¹

These risks are probabilities that are expressed typically in scientific notation (e.g., 1×10^{-6}). An excess lifetime risk of 1×10^{-6} indicates that an individual experiencing the reasonable maximum exposure (RME) estimate has a 1 in 1,000,000 chance of developing cancer as a result of site-related exposure. This is referred to as excess lifetime cancer risk because it would be in addition to the risks of cancer individuals face from other causes such as smoking or exposure to too much sun. The chance an individual developing cancer from all other causes has been estimated to be as high as one in three. EPA's generally-acceptable risk range for site-related exposures is 1×10^{-4} to 1×10^{-6} .

The potential for non-carcinogenic effects is evaluated by comparing an exposure level over a specified time period (e.g., a lifetime) with a reference dose (RfD) derived for a similar exposure period. An RfD represents a level that an individual may be exposed to that is not expected to cause any adverse effect. The ratio of exposure to toxicity is called a hazard quotient (HQ). An HQ less than 1 indicates that a receptor's dose of a single contaminant is less than the RfD, and that toxic non-carcinogenic effects from that chemical are unlikely. The hazard index (HI) is generated by adding the HQs for all COCs to which a given individual may reasonably be exposed that affect the same target organ (e.g., liver) or that act through the same mechanism of action within a medium or across all media. An HI of 1 or less indicates that, based on the sum of all HQs from different contaminants and exposure routes, toxic non-carcinogenic effects from all contaminants are unlikely. An HI greater than 1 indicates that site-related exposures may present a risk to human health. When the total site HI is greater than 1 for any receptor, a more detailed evaluation of potential non-carcinogenic effects based on specific health or target endpoints (e.g., liver effects, neurotoxicity) is performed (EPA, 1989a).

The HQ is calculated as follows:

$$\text{Non-cancer HQ} = \text{CDI} / \text{RfD}$$

Where:

CDI = chronic daily intake

RfD = reference dose

CDI and RfD are expressed in the same units and represent the same exposure period (i.e., chronic, subchronic, or short-term).

Tables 27 through Table 40 provide a summary of the potential carcinogenic and non-carcinogenic risks from each site's COCs and potential receptors. Further risk summary details are included for each site in Appendix D. HIs that are greater than one on a total basis, but are below one on a target organ basis are not highlighted in the risk summary tables.

Site O

The total carcinogenic risk and the total HI for the outdoor industrial worker, the construction/utility worker, and the trespassing teenager are listed below. Carcinogenic risks greater than 1×10^{-4} are highlighted. HIs are highlighted where the total is greater than one on a target endpoint basis.

Table 27: Site O - Total Potential Risk and Hazard Index		
Receptor	Cancer	Non-Cancer
Indoor Industrial Worker	2.0E-08	3.7E-04
Outdoor Industrial Worker	3.2E-04	7.4E+00
Construction/Utility Worker	4.0E-05	3.1E+00
Trespassing Teenager	2.5E-05	1.0E+00

Site O is located in an isolated area and is not currently used. Currently, the former ABRTF lagoons are covered and vegetated, and the vegetation is mowed periodically during the warmer months of the year. Therefore, the risks presented above for workers represent a potential future scenario (the only activity under the current scenario is mowing, which is limited in frequency and duration).

Site O North

The total carcinogenic risk and the total HI for the outdoor industrial worker, the construction/utility worker, and the trespassing teenager are listed below. Carcinogenic risks greater than 1×10^{-4} are highlighted. HIs are highlighted where the total is greater than one on a target organ basis.

Table 28: Site O North- Total Potential Risk and Hazard Index		
Receptor	Cancer	Non-Cancer
Outdoor Industrial Worker	2.2E-03	7.5E+01
Construction/Utility Worker	4.9E-04	4.8E+01
Trespassing Teenager	1.9E-04	1.0E+01

Site O North is located in an isolated area and is not currently used. The former ABRTF lagoons are covered and vegetated, and the vegetation is mowed periodically during the warmer months of the year. Therefore, the risks presented above for construction/utility workers represent a potential future scenario (the only activity under the current scenario is mowing, which is limited in frequency and duration).

Site O South

The total carcinogenic risk and the total HI for the outdoor industrial worker, the construction/utility worker, and the trespassing teenager are listed below.

Table 29: Site O South- Total Potential Risk and Hazard Index		
Receptor	Cancer	Non-Cancer
Outdoor Industrial Worker	NCOPC	NCOPC
Construction/Utility Worker	2.3E-08	4.5E-04
Trespassing Teenager	NCOPC	NCOPC

The risks noted above are below the target risk level of 1×10^{-4} , and the HIs are below one. Because there were no target risk levels above acceptable levels, no COCs are identified.

Site P

The total carcinogenic risk and the total HI for the outdoor industrial worker, the construction/utility worker, and the trespassing teenager are listed below. The carcinogenic risks were less than the target risk level of 1×10^{-4} . HIs are highlighted where the total is greater than one on a target endpoint basis.

Table 30: Site P-Total Potential Risk and Hazard Index		
Receptor	Cancer	Non-Cancer
Indoor Industrial Worker	2.0E-05	9.9E-01
Outdoor Industrial Worker	7.2E-05	1.4E+00
Construction/Utility Worker	7.0E-06	1.9E+00
Trespassing Teenager	2.7E-06	1.2E-01

Site P is currently inactive and in large part covered, and access to the site is unrestricted. A nightclub and asphalt parking lot occupy three acres in the southeast corner of the site. The risks presented above for construction/utility workers represent a potential future scenario. Although risks and hazards are acceptable for the indoor industrial worker, vapor intrusion sampling and subsequent risk analysis could not rule out a potential for risk due to exposure to vapors inside the on-site nightclub.

Site Q North

The total carcinogenic risk and the total HI for the outdoor industrial worker, the construction/utility worker, and the trespassing teenager are listed below. Carcinogenic risks were less than 1×10^{-4} . HIs are highlighted where the total is greater than one on a target organ basis.

Table 31: Site Q North – Total Potential Risk and Hazard Index		
Receptor	Cancer	Non-Cancer
Indoor Industrial Worker	4E-6	6.4E-1
Outdoor Industrial Worker	7.8E-05	1.4E+00
Construction/Utility Worker	8.5E-05	1.1E+01

Table 31: Site Q North – Total Potential Risk and Hazard Index		
Receptor	Cancer	Non-Cancer
Trespassing Teenager	1.9E-05	1.7E-01

A 10-acre area on Site Q North is currently used by River City Landscape Supply as a bulk storage terminal for lawn and garden products. Raw landscape products such as mulch, rock and soil are processed and packed on this portion of the site. Access to some portions of the site is restricted by fencing and gates. Other parts of the site have unrestricted access. As noted above, unacceptable risk for this area was identified for the construction/utility worker, not for the outdoor industrial worker. Therefore, the risks presented above are for a potential future construction/utility worker, as there is no current excavation work in this area.

Site Q Central

The total carcinogenic risk and the total HI for the outdoor industrial worker, the construction/utility worker, and the trespassing teenager are listed below. In addition, the total carcinogenic risk and the total HI for the trespassing teenager and the recreational angler from seep exposure are listed in Table 33. Carcinogenic risks were less than 1×10^{-4} . HIs are highlighted where the total is greater than one on a target endpoint basis.

Table 32: Site Q Central- Total Potential Risk and Hazard Index		
Receptor	Cancer	Non-Cancer
Indoor Industrial Worker	1.0E-05	1.5E+00
Outdoor Industrial Worker	7.5E-05	1.6E+00
Construction/Utility Worker	5.7E-06	5.2E-01
Trespassing Teenager	3.5E-05	2.1E-01

Table 33: Site Q Central Seep- Total Potential Risk and Hazard Index		
Receptor	Cancer	Non-Cancer
Trespassing Teenager	1.0E-05	4.7E-01
Recreational Angler	4.0E-05	6.7E-01

Site Q Central houses a barge terminal facility and is largely covered by gravel or buildings. Therefore, the surface soil is not readily accessible in all locations. In 2007, construction of a rail, river barge, and truck transportation facility for the ethanol industry began on Site Q Central. Five 98,900-barrel capacity ethanol storage tanks are located on the site. Access to parts of Site Q Central is restricted by fences.

Site Q South

The total carcinogenic risk and the total HI for the outdoor industrial worker, the construction/utility worker, and the trespassing teenager are listed below. Carcinogenic risks greater than 1×10^{-4} are highlighted. HIs are highlighted where the total is greater than one on a target endpoint basis.

Table 34: Site Q South -Total Potential Risk and Hazard Index		
Receptor	Cancer	Non-Cancer
Outdoor Industrial Worker	1.2E-04	6.7E+00
Construction/Utility Worker	9.3E-06	3.6E+00
Trespassing Teenager	1.4E-05	1.0E+00

Site Q South is predominantly vacant open land and access is unrestricted. The risks presented above for workers represent a potential future scenario.

Site Q South Ponds

The total risk and the total HI for the trespassing teenager and the recreational angler are listed below. Carcinogenic risks greater than 1×10^{-4} are highlighted. HIs are highlighted where the total is greater than one on a target endpoint basis.

Table 35: Site Q South Large Pond - Total Potential Risk and Hazard Index		
Receptor	Cancer	Non-Cancer
Trespassing Teenager	2.0E-06	3.2E-01
Recreational Angler (with Black Bullhead Fillet)	5.6E-04	2.4E+01
Recreational Angler (with Carp Fillet)	1.4E-03	6.0E+01

Table 36: Site Q South Small Pond -Total Potential Risk and Hazard Index		
Receptor	Cancer	Non-Cancer
Trespassing Teenager	2.3E-04	1.8E-01
Recreational Angler	3.0E-04	3.2E-01

Although risks were identified in the Site Q South Large Pond and Small Pond for trespassing teenagers and recreational anglers, it is important to note that these risks are only present as a result of flood events in the Mississippi River. After the ponds dry out, fish are not reintroduced until another flood event, although water may collect in the ponds from precipitation.

Site R

The total carcinogenic risk and the total HI for the outdoor industrial worker, the construction/utility worker, and the trespassing teenager are listed below. The total carcinogenic risk and the total HI for the trespassing teenager and the recreational angler seep exposure are also listed.

Carcinogenic risks greater than 1×10^{-4} are highlighted. HIs are highlighted where the total is greater than one on a target endpoint basis.

Table 37: Site R - Total Potential Risk and Hazard Index		
Receptor	Cancer	Non-Cancer
Outdoor Industrial Worker	4.2E-01	4.7E+03
Construction/Utility Worker	8.8E-02	1.1E+04
Trespassing Teenager	7.0E-03	1.8E+02

Table 38: Site R Seep - Total Potential Risk and Hazard Index		
Receptor	Cancer	Non-Cancer
Trespassing Teenager	9.0E-07	4.7E-02
Recreational Angler	3.5E-06	6.6E-02

Site R is a closed industrial-waste disposal area owned by Solutia, Inc. The site is not currently used. Access to Site R is restricted by fencing and is monitored by Solutia plant personnel. The trespasser and utility/construction worker risks represent a potential future scenario. Excavation is not allowed at Site R. There are no utilities located in Site R.

Site S

The total carcinogenic risk and the total HI for the outdoor industrial worker, the construction/utility worker, and the trespassing teenager are listed below. Carcinogenic risks greater than 1×10^{-4} are highlighted. HIs are highlighted where the total is greater than one on a target endpoint basis.

Table 39: Site S - Total Potential Risk and Hazard Index		
Receptor	Cancer	Non-Cancer
Indoor Industrial Worker	2.0E-06	1.7E-03
Outdoor Industrial Worker	1.0E-03	6.6E+01
Construction/Utility Worker	4.3E-05	1.2E+01
Trespassing Teenager	5.6E-05	8.1E+00

The 1-acre site is currently not used. The northern portion of the site is grassed, and its southern portion is covered with gravel and fenced. Therefore, the potential risks presented above for workers represent the future scenario only.

Mississippi River

The total carcinogenic risk and the total HI for the trespassing teenager and the recreational angler are listed below.

Table 40: Mississippi River - Total Potential Risk and Hazard Index		
Receptor	Cancer	Non-Cancer
Trespassing Teenager	4.1E-08	1.7E-03
Recreational Angler- Plume Discharge Area	3.9E-06	6.0E-02
Recreational Angler – Upstream Discharge Area	3.9E-05	5.3E-01
Recreational Angler – Downstream Discharge Area	5.3E-06	8.2E-02

The risks noted above are below or within the target risk range of 1×10^{-6} to 1×10^{-4} , and the potential HIs are below one. Because there were no unacceptable risks identified, no COCs are identified.

2.7.8 - Uncertainties

Uncertainty is inherent in the process of quantitative risk assessment because of the use of environmental sampling results, assumptions regarding exposure, and the quantitative representation of chemical toxicity. Potentially significant sources of uncertainty for this assessment are discussed in the HHRA and include analytical data, exposure estimates, toxicity estimates, and background conditions.

2.7.9 – Summary of Ecological Risk Assessment

In July 2008, the PRPs conducted a baseline ecological risk assessment (BERA), with EPA oversight, to evaluate the risks to ecological receptors on a site by site basis. Ecological risks to biological receptors living within the aquatic and terrestrial ecosystems located on or adjacent to the Sites, as a result of exposures to Site-related constituents were evaluated.

Surface water and sediment samples from locations upstream, adjacent to, and downstream of the Sites were collected and evaluated. The BERA concluded prior to the construction of the Sauget Area 2, OU2 interim remedial action for groundwater (known as the GMCS), there were some ecological risks associated with the presence of contaminants of potential ecological concern (COPEC) in Mississippi River sediments and surface water. After construction of the GMCS, there were no adverse ecological impacts associated with the presence of COPECs in Mississippi River sediments adjacent to or downstream of the sites or surface water. Thus, the risks posed by COPECs have been eliminated by the installation of the GMCS barrier wall.

The BERA identified risks associated with COPECs in surface soil at only two sites at the Sauget Area 2 Site: Site O and Site Q South. Ecological risks to herbivores and carnivores from exposure to dioxins/furans are present at Site O and Site Q South. Sites O (vole and fox) and Q (fox only) were considered to pose risks to mammals from exposure to dioxins/furans in the floodplain.

2.7.10 - Risk Assessment Conclusions

The 2008 ecological risk evaluation, as discussed above, concluded there were no adverse ecological impacts to Mississippi River sediments or surface water adjacent to or downstream of the Site due to contaminants discharging into the River from the Site. Thus, the risks to the Mississippi River have been eliminated by the installation of the GMCS barrier wall. However, two sites, Site O and Site Q South, had identified ecological risks associated with contaminants in surface soils.

The Vapor Intrusion HHRA evaluated buildings located on or nearby the Site with potentially complete vapor intrusion pathways, which included Site P, Q North, Q Central and S. Sites O, Q South, and R did not have buildings with complete vapor intrusion pathways; therefore were not evaluated in the Vapor Intrusion HHRA. The Vapor Intrusion HHRA concluded potential risks

from vapor intrusion to the indoor industrial worker were within EPA's acceptable levels for all the sites evaluated. However, vapor intrusion sampling and subsequent risk analysis could not rule out a potential for risk due to exposure to vapors inside the night club located at Site P and the RCLS warehouse located on Site Q North.

Previous removal actions conducted by EPA at Site Q Central and Site Q South have removed a significant source of principal threat wastes at the site by excavating and disposing off-Site approximately 3,271 drums and 14,000 tons of high-level PCB contaminated soil; thereby significantly reducing risk at the Site.

The remaining contaminant source areas at the Sauget Area 2 Site are the disposal areas at Sites O, O North, P, Q North, Q Central, Q South, R, and S. Risks or hazards above EPA's acceptable level for human health and the environment were identified in these disposal areas and summarized below.

In summary, risks and hazards were within or below EPA's target risk range of 1×10^{-4} to 1×10^{-6} and a target hazard index of 1 on a target endpoint basis and, therefore, no COCs were identified in the soils, sediments, and surface water in the following area:

- Site O South

Some risks or hazards exceeded EPA's target risk range of 1×10^{-4} to 1×10^{-6} and/or a target hazard index of 1 on a target endpoint basis and, therefore, COCs were identified for the following Sites:

- Site O and O North – Outdoor industrial worker, construction/utility worker, and trespassing teenager receptors
- Site P – Indoor industrial worker¹², outdoor industrial worker, and construction/utility worker receptors
- Site Q North – Indoor industrial worker¹³, outdoor industrial worker, and construction/utility worker
- Site Q Central – Outdoor industrial worker
- Site Q South – Outdoor industrial worker, construction/utility worker, and trespassing teenager
- Site Q South Ponds – Recreational angler and trespassing teenager receptors
- Site R – Outdoor industrial worker, construction/utility worker, and trespassing teenager receptors

¹² Although the VI HHRA concluded risks and hazards are acceptable for the indoor industrial worker, vapor intrusion sampling and subsequent risk analysis could not rule out a potential for risk due to exposure to vapors inside the PT's Adult Entertainment located on Site P.

¹³ Although the VI HHRA concluded risks and hazards are acceptable for the indoor industrial worker, vapor intrusion sampling and subsequent risk analysis could not rule out a potential for risk due to exposure to vapors inside the RCLS warehouse building located on Site Q North.

- Site S – Outdoor industrial worker, construction/utility worker, and trespassing teenager receptors

The potential risk to human health and the environment from COCs in soils, sediments, surface water, and groundwater sources at Sites O, O North, P, Q North, Q Central, Q South, R, and S drives the need for remedial action at OU1 of the Sauget Area 2 Site. The response action selected in this ROD is necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

2.8 – Remedial Action Objectives

Remedial action objectives (RAOs) are goals specific to media or operable units for protecting human health and the environment. Risk can be associated with current or potential future exposures. RAOs should be as specific as possible, but not so specific that the range of alternatives to be developed is unduly limited.

As discussed in Section 2.7, the HHRA recognized the following receptors for current and future land-use scenarios: indoor industrial workers, outdoor industrial workers, construction/utility workers, trespassing teenagers, and recreational anglers. Potential exposure routes for each receptor are depicted in the conceptual site model for human health (Figure 2). Current OU1 land uses are industrial/commercial, trespassing, and recreational angling. EPA assumed that future land uses of all properties would be the same as current land uses (e.g., industrial and commercial).

The following RAOs have been identified for the Sauget Area 2 Site based on the summary of receptor potential risks and hazards for the exposure scenarios presented in the HHRAs:

Site O and O North

- Prevent human exposure to COCs in surface and near-surface wastes and soils at levels causing unacceptable risk for future construction/utility work, industrial/commercial, and trespassing teenager uses.
- Minimize current and future migration of COCs from soil and waste to groundwater at levels causing unacceptable risks.
- Prevent ecological exposure to COCs in surface soils at levels causing unacceptable risk to the environment.
- Minimize migration of mobile source material.

Site P

- Prevent human exposure to COCs in surface and near-surface wastes and soils at levels causing unacceptable risk for industrial/commercial uses and future construction/utility work.

- Prevent human exposure to vapor intrusion into indoor air at levels that result in unacceptable risk from COCs in waste materials, soils, or groundwater.
- Minimize current and future migration of COCs from soil and waste to groundwater at levels causing unacceptable risks.
- Minimize migration of principal threat/ mobile source material.

Site Q North

- Prevent human exposure to COCs in surface and near-surface wastes and soils at levels causing unacceptable risk for industrial/commercial uses and future construction/utility work.
- Minimize current and future migration of COCs from soils and waste to groundwater at levels causing unacceptable risks.
- Minimize the potential for releases of COCs in wastes and soils due to bank erosion and Mississippi River flooding.
- Minimize migration of principal threat/mobile source material.
- Prevent human exposure to vapor intrusion into indoor air at levels that result in unacceptable risk from COCs in waste materials, soils, or groundwater.

Site Q Central

- Prevent human exposure to COCs in surface and near-surface wastes and soils at levels causing unacceptable risk for industrial/commercial uses and future construction/utility work.
- Minimize current and future migration of COCs from soils and waste to groundwater at levels causing unacceptable risks.
- Minimize the potential for releases of COCs in wastes and soils due to bank erosion and Mississippi River flooding.
- Minimize migration of principal threat/mobile source material.
- Prevent human exposure to vapor intrusion into indoor air in potential future buildings at levels that result in unacceptable risk from COCs in waste materials, soils, or groundwater.

Site Q South and Q South Ponds

- Prevent human exposure to COCs in surface and near-surface wastes and soils at levels causing unacceptable risk for industrial/commercial uses, construction/utility work, and trespassing teenagers.
- Minimize current and future migration of COCs from soils and waste to groundwater at levels causing unacceptable risks.

- Minimize the potential for releases of COCs in wastes and soils due to bank erosion and Mississippi River flooding.
- Minimize migration of principal threat/mobile source material.
- Prevent human exposure to vapor intrusion into indoor air in potential future buildings at levels that result in unacceptable risk from COCs in waste materials, soils, or groundwater.
- Prevent human exposure to particulates in outdoor air at levels that result in unacceptable risk from COCs in waste materials or soils due to future construction activities.
- Prevent ecological exposure to COCs in surface soils at levels causing unacceptable risk to the environment. Prevent human exposure to COCs in surface water and sediments via incidental ingestion and dermal contact while wading in the Site Q South ponds to trespassing teenagers.
- Prevent unacceptable risk to recreational angler resulting from exposure via ingestion of fish caught in the Site Q South ponds.

Site R

- Prevent human exposure to COCs in surface and near-surface wastes and soils at levels causing unacceptable risk for industrial commercial uses and future construction/utility work.
- Minimize the potential for releases of COCs in wastes or soils due to bank erosion and Mississippi River flooding.
- Minimize current and future migration of COCs from soil and waste to groundwater at levels causing unacceptable risks.
- Minimize migration of principal threat/mobile source material.
- Prevent human exposure to vapors released to outdoor air at levels that result in unacceptable risk from COCs in waste materials, soils, or groundwater due to trespassing.
- Prevent human exposure to vapor intrusion into indoor air in potential future buildings at levels that result in unacceptable risk from COCs in waste materials, soils, or groundwater.

Site S

- Prevent human exposure to COCs in surface and near-surface wastes and soils at levels causing unacceptable risk for industrial/commercial uses, construction/utility work, and trespassing teenagers.
- Minimize current and future migration of COCs from soil and waste to groundwater at levels causing unacceptable risks.
- Minimize migration of mobile source material.

- Prevent human exposure to vapor intrusion into indoor air in potential future buildings at levels that result in unacceptable risk from COCs in waste materials, soils, or groundwater.

A clean-up that achieves these RAOs will be protective of human health and the environment because it will address current and future risks above EPA-acceptable levels in Site media.

Remedial Goals

For potentially carcinogenic risk results, COCs are identified as those COPCs that cause an exceedance of the target risk level of 1×10^{-4} . For non-carcinogenic hazard results, COCs are identified as those COPCs that cause an exceedance of the toxic-endpoint specific HI of 1. Remediation goal options (RGOs) have been calculated for those COPCs identified as COCs in the HHRAs. RGOs are summarized in Appendix E of this ROD.

2.9 – Description of Alternatives

This section presents the remedial alternatives for OU1, which are numbered to correspond with the numbering system used in the FS Report. The alternatives are described more fully in Section 2.9.2.

In accordance with EPA guidance, the potential remedial alternatives identified in the FS were screened against three broad criteria: (1) effectiveness (both short-term and long-term), (2) implementability (including technical and administrative feasibility), and (3) relative cost (capital and operation and maintenance (O&M)). The purpose of the screening evaluation was to reduce the number of alternatives chosen for a more thorough analysis.

2.9.1 - Common Element of Alternatives

All of the alternatives, except Alternatives O1, P1, QN1, QC1, QS1, R1, and S1 ("no action" alternatives) include the following common elements:

Engineered Caps - Engineered caps minimize the potential for exposure to COCs in soils and waste in covered areas. The types of engineered caps selected for a remedial alternative will vary depending on the existing uses of the Sites and the types of fill or waste materials present at the Sites and will follow the requirements of the federal or more stringent state requirements.

Federal regulations governing hazardous waste landfill closure are RCRA Subpart G (Closure and Post-Closure) and Subpart N (Closure and Post-Closure for Landfills). Illinois has been authorized by EPA to implement RCRA. The corresponding Illinois regulations are 35 Illinois Administrative Code (IAC) Part 724, Subtitle G (Waste Disposal), Subchapter C, Subpart G (Closure and Post-Closure), Sections 724.400 to 724.417. Groundwater monitoring requirements are identified in 35 IAC 724.197. These requirements are equivalent to the federal requirements. In addition, the Illinois solid waste landfill requirements, including closure and post-closure care (Subpart E), for non-hazardous waste are presented in 35 IAC Part 807.

The types of engineered covers included in the remedial alternatives for the Sauget Area 2 Sites include RCRA Subtitle C designed caps, 35 IAC § 724¹⁴ compliant soil caps, 35 IAC § 724 compliant crushed rock caps, asphalt caps, and 35 IAC § 807 caps.

RCRA Subtitle C designed caps are multi-layer caps that promote surface water drainage and minimize surface water infiltration into subsurface soils that lie beneath the capped area. They include a low-permeability layer underlain by a gas collection layer and overlain by a drainage layer and protective soil cover and vegetative layer. At traffic areas, the protective surface layer of a RCRA Subtitle C designed cap can be constructed of alternate materials such as crushed rock or asphalt pavement.

A 35 IAC § 724 compliant soil or crushed rock cap will meet the performance standards of a RCRA Subtitle C cap, except the component requiring long-term minimization of migration of liquids. This component is not appropriate for the Sauget Area 2 Sites (see Section 2.10.2). Both the soil and crushed rock caps will use clean material to minimize potential for exposure to COCs in soil and waste. Both caps would require a minimum of two feet of suitable material. Crushed rock caps will use granular material to cover an area. The granular material can be free-draining or less permeable material, depending on Site-specific conditions.

35 IAC § 807 caps generally consist of 6 inches of soil overlying approximately 18 inches of compacted clay over the waste areas.

Asphalt caps include a prepared sub-grade, aggregate base, and an asphalt surface layer. The pavement and aggregate base thickness can be tailored to location specific conditions. Asphalt covers require long-term inspection and maintenance to retain their effectiveness to reduce surface water infiltration and significantly reduce the potential for exposure to COCs in the covered area.

Details of the engineered cap designs for Sauget Area 2 would be developed during the remedial design process.

Institutional and Access Controls – Institutional controls are designed to control access to the Site, manage construction or other intrusive activities that may disturb soil or waste, minimize potential exposure to COCs, and ensure that groundwater is not used for drinking water purposes. Institutional controls that could be implemented include deed restrictions, zoning restrictions and access restrictions such as fences or warning signs. At a minimum, institutional

¹⁴ Subtitle C of RCRA, 42 U.S.C §§ 6921-6939e, directs the EPA Administrator, among other things, to regulate the owners and operators of hazardous waste treatment, storage, and disposal ("TSD") facilities, including landfills. Pursuant to this statutory scheme, EPA has promulgated regulations, codified at 40 C.F.R. Parts 264 and Illinois has adopted analogous regulations codified at 35 IAC Part 724 establishing standards applicable to hazardous waste generators, transporters, and TSD facilities. The federal regulations governing hazardous waste landfill closure are at 40 CFR Part 264, Subpart G (Closure and Post-Closure) and Subpart N (Landfills) See 40 CFR § 264.310. Illinois has been authorized by EPA to implement RCRA through its state law and regulations. The corresponding Illinois regulations are 35 IAC Part 724, Subpart G (Closure and Post-Closure Care) and Subpart N (Landfills) See 35 IAC § 724.410. These requirements are equivalent to the federal requirements. In addition, the Illinois solid waste landfill requirements for non hazardous waste are presented in 35 IAC Part 807.

controls will be implemented in accordance with the Illinois Uniform Environmental Covenant Act to restrict residential development of the Site. Consistent with expectations set out in the Superfund regulations, none of the remedies rely exclusively on institutional controls to achieve protectiveness. A detailed description of the institutional controls for Sauget Area 2 will be developed in an Institutional Controls Implementation Plan to be prepared during the remedial design process.

2.9.2 – Summary of Remedial Alternatives

Alternatives O1, P1, Q1, R1, and S1:

- **No Action**

Estimated Capital Cost: \$0

Estimated Total O&M Cost: \$0

Estimated Present Worth Cost: \$0

Estimated Construction Timeframe: None

Regulations governing the Superfund program require that the “no action” alternative be evaluated to establish a baseline for comparison. Under this alternative, EPA would take no action at the Site to prevent exposure to the soil and groundwater source contamination.

Site O and O North

Alternative O2:

- **35 IAC § 724 Compliant Soil Cap Over Identified Waste Areas**

- **Institutional and Access Controls**

Estimated Capital Cost: \$5,900,000

Estimated O&M Present Worth Cost: \$420,000

Estimated Present Worth Cost: \$6,300,000

Estimated Construction Timeframe: 1 to 2 years

Institutional controls and engineered caps were described under “Common Elements” above. This alternative includes a 35 IAC § 724 compliant soil cap over the identified waste areas and institutional controls. The areas to be capped under this alternative are the areas where industrial waste was identified in the RI (URS, 2008a) as shown on Figure 4. Through RI sampling, it is believed that much of the site already has a minimum of 2 feet of soil cover. These areas would not require additional soil cover if the pre-design investigation can confirm cover thickness. Areas requiring additional cover in order to meet the 2-foot minimum requirement would be identified during the pre-design investigation.

Alternative O3:

- **Phytotechnology in Potentially Mobile Source Areas**

- **35 IAC § 724 Compliant Soil Cap Over Remainder of Identified Waste Areas**

- **Institutional and Access Controls**

Estimated Capital Cost: \$5,400,000

Estimated Present Worth O&M Cost: \$400,000

Estimated Present Worth Cost: \$5,800,000

Estimated Construction Timeframe: 1 to 2 years

This alternative includes the components of Alternative O2 above, with phytotechnology in the potential mobile source areas, as described below. Institutional controls and engineered caps were described under "Common Elements" above. This alternative includes a 35 IAC § 724 compliant soil cap over the identified waste areas and institutional controls. The areas to be capped under this alternative are the areas where industrial waste was identified in the RI (URS, 2008a) as shown on Figure 5 outside of areas subject to phytotechnology, as described below.

Phytotechnology in Potential Mobile Source Areas - This process option involves a soil cover and phytotechnology in potential mobile source areas, as shown on Figure 5. Phytotechnology is the use of specially selected plants to provide added benefit in contaminant reduction (i.e., remediation) of selected COCs. It utilizes a variety of plant biological processes and the physical characteristics of plants to aid in Site remediation. Phytotechnology encompasses a number of different processes that can lead to contaminant degradation, removal (through accumulation or dissipation), or immobilization including: degradation, rhizodegradation (enhancement of biodegradation in the below-ground root zone by microorganisms), phytodegradation (contaminant uptake and metabolism above or below ground, within the root, stem, or leaves), phytoextraction (contaminant uptake and accumulation), phytovolatilization (contaminant uptake and volatilization), and phytostabilization (contaminant immobilization in the soil). Phytotechnology enhanced vegetated covers can combine a variety of these methods for containment, removal, and/or destruction of COCs.

Alternative O4:

- **RCRA Subtitle C Designed Cap Over Identified Waste Areas**
- **Institutional and Access Controls**

Estimated Capital Cost: \$16,000,000

Estimated Present Worth O&M Cost: \$600,000

Estimated Present Worth Cost: \$17,000,000

Estimated Construction Timeframe: 1 to 2 years

Institutional controls and engineered caps were described under "Common Elements" above. This alternative includes a RCRA subtitle C designed cap over the identified waste areas. The areas to be capped under this alternative are the areas where industrial waste was identified in the RI (URS, 2008a), as shown on Figure 4.

Site P

Alternative P2:

- **Asphalt Cover Over Potentially Mobile Source Area (SA-P-3/AT-P-5)**
- **35 IAC § 807 Solid Waste Landfill Cap Over Remainder of Identified Waste Areas**
- **Vapor Intrusion Mitigation**
- **Institutional and Access Controls**

Estimated Capital Cost: \$2,300,000

Estimated Present Worth O&M Cost: \$300,000

Estimated Present Worth Cost: \$2,600,000

Estimated Construction Timeframe: 1 to 2 years

Institutional controls and engineered caps were described under "Common Elements" above. The additional component of Alternative P is described below. This alternative includes asphalt and 35 IAC § 807 caps over the identified waste areas, as identified in Figure 6, and institutional controls. The areas to be capped under this alternative are the areas where industrial waste was identified in the RI (URS, 2008a) as shown on Figure 6, outside of the area with an asphalt cover.

Vapor Intrusion Mitigation - Vapor intrusion sampling during the RI and the subsequent risk analysis could not rule out the potential for risk due to exposure to vapors inside the nightclub. As part of the Site P remedial design, indoor air and/or sub-slab sampling will be completed to further evaluate if a potential risk does exist. If the analysis indicates a potential risk does exist, a vapor control system would be designed and installed inside the nightclub as part of Alternative P2. Institutional controls will also be implemented to address vapor intrusion into any newly constructed buildings within the boundaries of the Site. Vapor intrusion would be addressed through an evaluation of each new building and vapor mitigation measures would be designed into the building to address any potential unacceptable risk.

Alternative P3:

- **NAPL Collection at Well LEACH P-1**
- **Asphalt Cap Over Potentially Mobile Source Area (SA-P-3/AT-P-5)**
- **35 IAC § 807 Solid Waste Landfill Cap Over Remainder of Identified Waste Areas**
- **Vapor Intrusion Mitigation**
- **Institutional and Access Controls**

Estimated Capital Cost: \$2,300,000

Estimated Present Worth O&M Cost: \$600,000

Estimated Present Worth Cost: \$2,900,000

Estimated Construction Timeframe: 1 to 2 years

This alternative includes the components of Alternative P2 above, and NAPL collection at well LEACH P-1, as described below.

NAPL Collection at Well LEACH P-1 - The NAPL recovery well system for Site P will include a pump and a collection and storage system to remove NAPL that accumulates in the well. Accumulated NAPL will be periodically removed from the storage system and disposed of in compliance with state and federal regulations. The complete system and details of operation will be specified in the remedial design. The endpoint for the NAPL recovery system will be when NAPL reaches an asymptotic rate of recovery based on empirical recovery data.

Alternative P4:

- **Asphalt Cover Over Potentially Mobile Source Area (SA-P-3/AT-P-5)**
- **RCRA Subtitle C Designed Cap Over Remainder of Identified Waste Areas**
- **Vapor Intrusion Mitigation**
- **Institutional and Access Controls**

Estimated Capital Cost: \$4,700,000

Estimated Present Worth O&M Cost: \$450,000

Estimated Present Worth Cost: \$5,200,000

Estimated Construction Timeframe: 1 to 2 years

Institutional controls and engineered caps were described under "Common Elements" above. Vapor intrusion migration was discussed under Alternative P2 above. This alternative includes asphalt and RCRA Subtitle C designed caps over the identified waste areas, as identified in Figure 6, and institutional controls. The areas to be capped under this alternative are the areas where industrial waste was identified in the RI (URS, 2008a) as shown on Figure 6, outside of the area with an asphalt cover, as identified on Figure 6:

Site Q North

Alternative QN2:

- **35 IAC § 724 Compliant Crushed Rock Cap Over Dogleg Area**
- **Vapor Intrusion Mitigation**
- **Institutional and Access Controls**

Estimated Capital Cost: \$1,100,000

Estimated Present Worth O&M Cost: \$170,000

Estimated Present Worth Cost: \$1,300,000

Estimated Construction Timeframe: 1 to 2 years

Institutional controls and engineered caps were described under "Common Elements" above. The additional component of Alternative QN2 is described below. This alternative includes a 35 IAC § 724 crushed rock cap over the dogleg area, as shown on Figure 7.

Vapor Intrusion Mitigation - Vapor intrusion sampling during the RI and the subsequent risk analysis could not rule out the potential for risk due to exposure to vapors inside the warehouse building. As part of the Site Q North remedial design, indoor air and/or sub-slab sampling will be completed to further evaluate if a potential risk does exist. If the analysis indicates a potential risk does exist, a vapor control system would be designed and installed inside the warehouse building as part of Alternative QN2. Institutional controls will also be implemented to address vapor intrusion into any newly constructed buildings within the boundaries of the Site. Vapor intrusion would be addressed through an evaluation of each new building and vapor mitigation measures would be designed into the building to address any potential unacceptable risk.

Alternative QN3:

- **RCRA Subtitle C Designed Cap Over Dogleg Area**
- **Vapor Intrusion Mitigation**
- **Institutional and Access Controls**

Estimated Capital Cost: \$12,000,000

Estimated Present Worth O&M Cost: \$550,000

Estimated Present Worth Cost: \$13,000,000

Estimated Construction Timeframe: 1 to 2 years

Institutional controls and engineered caps were described under "Common Elements." Vapor intrusion mitigation is described under Alternative QN2 above. This alternative includes a RCRA Subtitle C designed cap over the dogleg area, as shown on Figure 7.

Alternative QN4:

- **RCRA Subtitle C Designed Cover Over Identified Waste Areas**
- **Vapor Intrusion Mitigation**
- **Institutional and Access Controls**

Estimated Capital Cost: \$32,000,000

Estimated Present Worth O&M Cost: \$1,400,000

Estimated Present Worth Cost: \$33,400,000

Estimated Construction Timeframe: 1 to 2 years

Institutional controls and engineered caps were described under "Common Elements." Vapor intrusion mitigation is described under Alternative QN2 above. This alternative includes a RCRA subtitle C designed cap over the identified waste areas, as identified on Figure 8. The areas to be capped under this alternative are the areas where industrial waste was identified in the RI (URS, 2008a), as shown on Figure 8.

Alternative QN5:

- **35 IAC § 724 Compliant Crushed Rock Cap Over Identified Waste Areas**
- **Vapor Intrusion Mitigation**
- **Institutional and Access Controls**

Estimated Capital Cost: \$2,700,000

Estimated Present Worth O&M Cost: \$340,000

Estimated Present Worth Cost: \$3,000,000

Estimated Construction Timeframe: 1 to 2 years

Institutional controls and engineered covers were described under "Common Elements." Vapor intrusion mitigation is described under Alternative QN2 above. This alternative includes a 35 IAC § 724 compliant crushed rock cap over the identified waste areas. The areas to be capped under this alternative are the areas where industrial waste was identified in the RI (URS, 2008a), as shown on Figure 8.

Site Q Central

Alternative QC2:

- **35 IAC § 724 Compliant Crushed Rock Cap Over Identified Waste Areas**
- **Shoreline Erosion Protection**
- **Institutional and Access Controls**

Estimated Capital Cost: \$1,900,000

Estimated Present Worth O&M Cost: \$200,000

Estimated Present Worth Cost: \$2,100,000

Estimated Construction Timeframe: 1 to 2 years

Institutional controls and engineered caps were described under "Common Elements." The additional component of Alternative QC2 is described below. This alternative includes a 35 IAC § 724 compliant crushed rock cap over the identified waste areas, as shown on Figure 9. The areas to be capped under this alternative are the areas where industrial waste was identified in the RI (URS, 2008a), as shown on Figure 9.

Shoreline Erosion Protection - Site Q Central encompasses approximately 1,500 feet of shoreline along the east bank of the Mississippi River. Approximately 1,000 feet of the shoreline has been covered with riprap to provide erosion protection. There is a segment of the shoreline located upstream of an existing barge ramp where the riprap is not as dense as other areas. A localized area near this segment experienced significant erosion during the 1993 flood event. The eroded area was repaired after the flood event. Alternative QC2 includes placement of additional riprap along portions of the shoreline upstream of the barge ramp to supplement the existing riprap to provide additional shoreline protection. The segment to receive additional riprap is estimated to be 470 feet long.

Alternative QC3:

- **In-Situ SVE Treatment of Potentially Mobile Source Area at AT-Q32**
- **35 IAC § 724 Compliant Crushed Rock Cap Over Identified Waste Areas**
- **Shoreline Erosion Protection**
- **Institutional and Access Controls**

Estimated Capital Cost: \$2,400,000

Estimated Present Worth O&M Cost: \$380,000

Estimated Present Worth Cost: \$2,800,000

Estimated Construction Timeframe: 1 to 2 years

This alternative includes the components of Alternative QC2 above, and in-situ SVE treatment of potentially mobile source areas at AT-Q32, as described below.

In-situ SVE Treatment of Potentially Mobile Source Area at AT-Q32 - This component includes a soil vapor extraction (SVE) system to address the potential mobile source area near the barge ramp (Figure 10). The conceptual SVE system includes the following components: pilot test; a horizontal soil vapor extraction well; thermal oxidation unit with a propane fuel tank; vapor phase carbon adsorption system; liquid phase carbon adsorption system for knockout drum liquids; three vapor phase monitoring points; and O&M of the SVE system. The feasibility study description of Alternative QC3 included surface water sampling and/or sediment sampling during pre-design to determine whether SVE is warranted. This aspect of QC3 has been deleted and the SVE system is included in QC3 with no contingency based on sampling.

Alternative QC4:

- **RCRA Subtitle C Designed Cap Over Identified Waste Areas**
- **Shoreline Erosion Protection**
- **Institutional and Access Controls**

Estimated Capital Cost: \$38,000,000

Estimated Present Worth O&M Cost: \$1,200,000

Estimated Present Worth Cost: \$40,000,000

Estimated Construction Timeframe: 1 to 2 years

This alternative is similar to Alternative QC2 above, except the cap is a RCRA subtitle C designed cap, as shown on Figure 10. The area to be capped under this alternative is the area where industrial waste was identified in the RI (URS, 2008a), as shown on Figure 10.

Site Q South and Q South Ponds

Alternative QS2:

- **Removal of Intact Drums at AT-Q35**
- **35 IAC § 724 Compliant Cap Over Identified Risk Areas**
- **Institutional and Access Controls**

Estimated Capital Cost: \$1,900,000

Estimated Present Worth O&M Cost: \$130,000

Estimated Present Worth Cost: \$2,000,000

Estimated Construction Timeframe: 1 to 2 years

Institutional controls and engineered caps were described under "Common Elements." The additional component of Alternative QS2 is described below. This alternative includes a 35 IAC § 724 compliant cap over identified risk areas, as shown on Figure 11. The area to be capped under this alternative is the area exceeding acceptable risk levels as identified in the RI (URS, 2008a) and shown on Figure 11. Capping Site Q South will mitigate contaminant transport via run-off to the Site Q South Ponds. Since implementation of the interim groundwater remedy, there are no on-going ecological risks in the Mississippi River from the Site. The interim groundwater remedy has thus reduced the potential for flooding from the Mississippi River to further impact the Site-Q South Ponds.

Removal of Intact Drums at AT-Q35 - This alternative includes removal of intact drums located in the previously excavated RI trench AT-Q-35. The location of this former trench will be identified and re-excavated to the same dimensions (e.g., length, width, depth) as previously excavated. Any intact drums identified within the trench will be removed, placed in over pack drums, and treated/disposed off-site in accordance with EPA and Illinois EPA regulations. If intact drums are visible in the trench, the trench will be expanded to remove them to a maximum dimension of 2,500 square feet. Following removal of any intact drums, the excavated area will be backfilled with the soil removed from the trench and clean soil, and appropriately covered.

Alternative QS3:

- **Removal of Intact Drums at AT-Q35**
- **35 IAC § 724 Compliant Cap Over Identified Waste Areas**
- **Institutional and Access Controls**

Estimated Capital Cost: \$4,300,000

Estimated Present Worth O&M Cost: \$200,000

Estimated Present Worth Cost: \$4,500,000

Estimated Construction Timeframe: 1 to 2 years

Institutional controls and engineered caps were described under "Common Elements." Removal of intact drums is described under QS2 above. This alternative includes a 35 IAC § 724 compliant soil cap over identified waste areas. The area to be capped under this alternative is the area where industrial waste was identified in the RI (URS, 2008a), as shown on Figure 12.

Alternative QS4:

- **RCRA Subtitle C Designed Cap Over Identified Waste Areas**
- **Institutional and Access Controls**

Estimated Capital Cost: \$8,400,000
Estimated Present Worth O&M Cost: \$320,000
Estimated Present Worth Cost: \$8,700,000
Estimated Construction Timeframe: 1 to 2 years

Institutional controls and engineered covers were described under "Common Elements." This alternative includes a RCRA subtitle C designed cap over identified waste areas, as shown on Figure 12. The area to be capped under this alternative is the area where industrial waste was identified in the RI (URS, 2008a), as shown on Figure 12.

Site R

Alternative R2:

- **35 IAC § 724 Compliant Soil Cap Over Entire Site**
- **Institutional and Access Controls**

Estimated Capital Cost: \$1,700,000
Estimated Present Worth O&M Cost: \$310,000
Estimated Present Worth Cost: \$2,000,000
Estimated Construction Timeframe: 1 to 2 years

Institutional controls and engineered covers were described under "Common Elements." This alternative includes a 35 IAC § 724 compliant soil cap over the entire site, as shown on Figure 13. The area to be capped under this alternative is the area where industrial waste was identified in the RI (URS, 2008a), as shown on Figure 13.

An engineered soil cap is currently present at Site R and is expected to meet the minimum 24-inch cover requirement over the entire area to be covered. However, a pre-design investigation will be required to document the thickness and condition of the existing soil cover. The objective of this pre-design is to ensure that a minimum of 2 feet of compacted clay soil exists over the former landfill area, not including the slurry wall spoils materials placed on top of Site R during the GMCS construction.

Alternative R3:

- **RCRA Subtitle C Designed Cap Over Entire Site**
- **Institutional and Access Controls**

Estimated Capital Cost: \$8,900,000
Estimated Present Worth O&M Cost: \$290,000
Estimated Present Worth Cost: \$9,200,000
Estimated Construction Timeframe: 1 to 2 years

Institutional controls and engineered caps were described under "Common Elements." This alternative is similar to Alternative R2 above, except the cap is a RCRA subtitle C designed cap, as shown on Figure 13. The area to be capped under this alternative is the area where industrial waste was identified in the RI (URS, 2008a), as shown on Figure 13.

Site S

Alternative S2:

- **35 IAC § 724 Compliant Soil Cap Over Entire Site**
- **Institutional and Access Controls**

Estimated Capital Cost: \$230,000

Estimated Present Worth O&M Cost: \$92,000

Estimated Present Worth Cost: \$320,000

Estimated Construction Timeframe: 1 to 2 years

Institutional controls and engineered caps were described under "Common Elements." This alternative includes a 35 IAC § 724 compliant soil cap over the entire site, as shown on Figure 14. The area to be capped under this alternative is the area where industrial waste was identified in the RI (URS, 2008a), as shown on Figure 14.

Alternative S3:

- **In-Situ SVE Treatment of Potentially Mobile Source Areas**
- **35 IAC § 724 Compliant Soil Cap Over Entire Site**
- **Institutional and Access Controls**

Estimated Capital Cost: \$800,000

Estimated Present Worth O&M Cost: \$240,000

Estimated Present Worth Cost: \$1,000,000

Estimated Construction Timeframe: 1 to 2 years

This alternative includes the components of Alternative S2 above, and in-situ SVE treatment of potentially mobile source areas, as described below. This alternative includes a 35 IAC § 724 compliant soil cap over the entire site, as shown on Figure 14.

In-situ SVE Treatment of Potentially Mobile Source Areas - The conceptual design of this SVE system at Site S is similar to the SVE system described for Alternative QC3 except that vertical extraction wells will be used rather than a horizontal extraction well. Design details for the SVE system will be based on pilot testing completed during the remedial design.

Alternative S4:

- **RCRA Subtitle C Designed Cap Over Entire Site**
- **Institutional and Access Controls**

Estimated Capital Cost: \$570,000

Estimated Present Worth O&M Cost: \$ 92,000

Estimated Present Worth Cost: \$660,000

Estimated Construction Timeframe: 1 to 2 years

This alternative is similar to Alternative S2 above, except the cap is a RCRA Subtitle C cap over the entire site, as shown on Figure 14.

2.10 – Comparative Analysis of Alternatives

As required by CERCLA, nine criteria were used to evaluate the different remediation alternatives individually and against each other in order to select a remedy. This section of the Record of Decision summarizes the performance of each alternative against the nine criteria and notes how they compare to the other options under consideration.

The nine evaluation criteria fall into three groups: threshold criteria, primary balancing criteria, and modifying criteria. Threshold criteria, which include overall protection of human health and the environment and compliance with ARARs, are requirements that each alternative must meet in order to be eligible for selection. Primary balancing criteria, which include long-term effectiveness and permanence, reduction of toxicity, mobility, or volume of contaminants through treatment, short-term effectiveness, implementability, and cost, are used to weigh major trade-offs among alternatives. Modifying criteria include state/support agency acceptance and community acceptance, and are assessed after public comment is received on the Proposed Plan. In the final balancing of trade-offs between alternatives, upon which the final remedy selection is based, modifying criteria are of equal importance to the balancing criteria. The nine evaluation criteria are discussed below.

2.10.1 - Overall Protection of Human Health and the Environment

This criterion assesses how well the alternatives achieve and maintain protection of human health and the environment.

This evaluation criterion assesses whether each remedial alternative protects human health and the environment. This assessment focuses on how an alternative achieves protection over time and indicates how each source of contamination would be minimized, reduced, or controlled through treatment, engineering, or institutional controls. The evaluation of the degree of overall protection associated with each alternative is based largely on the exposure pathways and scenarios set forth in the baseline human health risk assessment (HHRA).

The "No Action" Alternatives O1, P1, QN1, QC1, QS1, R1 and S1 are not protective of human health or the environment because they do not meet the RAOs developed for the affected soils and waste at Sites O, O North, P, Q North, Q Central, Q South, R, or S; are not protective of human health and the environment; and do not comply with the ARARs identified for each of these sites. Because Alternatives O1, P1, QN1, QC1, QS1, R1 and S1 are not protective of human health and the environment, they are eliminated from consideration under the remaining eight criteria.

The engineered caps included in Alternatives O2, O3, O4, P2, P3, P4, QN2, QN3, QN4, QN5, QC2, QC3, QC4, QS2, QS3, QS4, R2, R3, S2, S3, and S4 achieve the RAO for surface and subsurface soil and the RAO for waste and leachate. These engineered caps, in conjunction with the institutional controls, minimize the potential for human exposure to COCs at the fill area and prevent erosion of the fill areas.

Alternatives O2, O3, O4, QC2, QC3, QC4, QS2, QS3, QS4, R2, R3, S2, S3, and S4 achieve the soil vapor RAO. Results of the vapor intrusion HHRA indicate that concentrations of COCs found in soil vapor do not pose an unacceptable risk to human receptors in existing buildings at Site O, Q Central, R, and S. Alternatives P2, P3, P4, QN2, QN3, QN4, and QN5 achieve the soil vapor RAO through the vapor mitigation component of these alternatives. O2, O3, O4, P2, P3, P4, QN2, QN3, QN4, QN5, QC2, QC3, QC4, QS2, QS3, QS4, R2, R3, S2, S3, and S4 include institutional controls that will prevent construction of new buildings on the source areas without vapor controls.

2.10.2 - Compliance with Applicable or Relevant and Appropriate Requirements

This criterion assesses how the alternatives comply with regulatory requirements. Federal and state regulatory requirements that are either applicable or relevant and appropriate are known as ARARs. Only state requirements that are more stringent than federal requirements are ARARs. There are three different categories of ARARs: chemical-specific, action-specific, and location-specific ARARs.

Landfill Closure/Post-Closure

Alternatives O2, O3, O4, P2, P3, P4, QN2, QN3, QN4, QN5, QC2, QC3, QC4, QS2, QS3, QS4, R2, R3, S2, S3, and S4 can be designed and implemented to comply with ARARs relating to closure and post-closure requirements for landfills, specifically 35 IAC § 724, which contain the standards for owners and operators of hazardous waste treatment, storage, and disposal facilities, and 35 IAC § 807 for Alternatives P2, P3, and P4, which contain standards for solid waste landfills. Although the 35 IAC § 807 standards for solid waste landfills are relevant to Sauget Area 2, they are not appropriate at Site O, O North, Q North, Q Central, Q South, R, and S because the hazardous waste landfill requirements of 35 IAC § 724 are better suited to Site conditions. However, Site P was operated as a permitted municipal solid waste landfill and as a result, the requirements of 35 IAC § 807 are applicable to closure and post-closure.

The engineered caps in Alternatives O2, O3, QN2, QN5, QC2, QC3, QS2, QS3, R2, S2, and S3 all comply with 35 IAC § 724.410's performance standards of functioning with minimal maintenance, promoting drainage, and minimizing erosion of the cap, and could accommodate settling and subsidence so that the cap's integrity is maintained. However, 35 IAC § 724.410's performance standard for providing long-term minimization of migration of liquids (including the RCRA Subtitle C designed cap proposed in Alternatives O4, QN3, QN4, QC4, QS4, R3, and S4) is not appropriate for Sites O, O North, Q North, Q Central, Q South and Site R because of the following:

Site O and O North:

- Groundwater data from the shallow hydraulic unit (SHU) indicated relatively minor impacts at Site O.
- Impacted groundwater at Site O is intercepted and treated by the GMCS and does not reach, or discharge, to the Mississippi River.

- The area of potential human health and ecological risk identified at Site O would be addressed by the cover included in the Selected Remedy for Site O: Alternative O2.
- No principal threat materials were identified at Site O.

Site Q North:

- Impacted groundwater from Site Q North-Dogleg is intercepted and treated by the GCMS and does not reach, or discharge, to the Mississippi River.
- Due to the proximity of Site Q North to the River and documented groundwater fluctuation based on the rising and falling River levels, installation of any type of cover to minimize infiltration would not address flushing effects from the rising and falling water table.

Site Q Central:

- No TCLP¹⁵ samples collected during the RI failed TCLP.
- Groundwater data from the SHU indicated relatively minor impacts at Site Q Central.
- Due to the proximity of Site Q North to the River and documented groundwater fluctuation based on river levels, installation of any type of cover to minimize infiltration would not address flushing effects from the rising and falling water table.
- No principal threat wastes were identified at Site Q Central.

Site Q South:

- Area of principal threat wastes at Site Q South will be addressed by removing the intact drums in the Selected Remedy for Site Q South.
- Groundwater data from the SHU indicated relatively minor impacts at Site Q South.

Site R:

- Site R is currently covered with approximately 5 feet of compacted clay.
- Impacted groundwater from Site R is intercepted and treated by the GMCS.

Polychlorinated Biphenyls (PCB) Regulation of Remediation Waste

As mentioned in Section 2.2, previous removal actions conducted by EPA at Site Q Central and Site Q South already have removed principal threat wastes by excavating and disposing off-Site approximately 3,271 drums and 14,000 tons of high-level polychlorinated biphenyls (PCB) contaminated soil. The remaining areas containing PCBs at the Sauget Area 2 Site are the disposal areas at Sites O, P, Q, R, and S. These disposal areas contain municipal and industrial waste materials, including crushed or partially crushed drums, drum fragments, debris, and miscellaneous trash. Collectively, Sites O, P, Q, R, and S contain an estimated 4.5 million

¹⁵ Toxicity Characteristic Leaching Procedure (TCLP) is a soil sample extraction method for chemical analysis employed as an analytical method to simulate leaching through a landfill. The testing methodology is used to determine if a waste is characteristically hazardous.

cubic yards of soil and waste. The lower portion of the waste at these Sites is below the water table. Remedial investigation sampling at Sites O, Q North, R, and S revealed PCB levels in the soil above 50 ppm. Soil samples taken from subsurface soil and waste showed PCB concentrations ranging from zero to 990 ppm at Site O, zero to 90 ppm at Q North, zero to 2 ppm at Site Q Central, zero to 10 ppm at Site Q South, zero to 130 ppm at Site R, and zero to 20 ppm at Site S.

The PCB-contaminated soils and wastes in the disposal areas in Sauget Area 2 Sites O, Q North, R, and S meet the definition of a PCB remediation waste as defined under 40 CFR § 761.3 because the soils and wastes contain PCBs as a result of a spill, release or unauthorized disposal which occurred prior to April 18, 1978, and thus are regulated for cleanup and disposal under 40 CFR Part 761. The requirements under TSCA and 40 CFR § 761.61(c) will be met through implementation of the Selected Remedy for OU1 at the Sauget Area 2 Site, as described below:

This Selected Remedy for OU1 at the Sauget Area 2 Site addresses principal threat wastes¹⁶ that are present at the Site, and in so doing, addresses unreasonable Site risks posed by PCBs. As mentioned, previous removal actions conducted by EPA at Site Q Central and Site Q South already have removed and disposed off-Site 3,271 drums and approximately 14,000 tons of high-level PCB contaminated soil wastes. EPA also ordered the construction of a Groundwater Migration and Control System (GMCS) next to the Mississippi River as an early interim OU2 groundwater remedy to capture and treat area groundwater before it releases to the River.¹⁷ However, to the degree that additional principal threat wastes containing PCBs remain at Site P, Q North, Q South, and R, the Selected Remedy applies treatment and containment strategies to these areas. Specifically, the NAPL found in Sites P and Q South (which only contains low levels of PCB) is recovered and treated, through off-Site incineration, and the intact drums located on Site Q South, which may contain PCB waste, are removed and properly disposed of under the Selected Remedy. The NAPL identified on Site Q North and Site R (which only contains low levels of PCB) are captured and treated by the Sauget Area 2 GMCS. Potential risks remaining at the Site related to PCB contamination is through potential direct contact to soils and waste contaminated with PCBs. To eliminate the direct contact exposure pathway, engineering controls¹⁸ in the form of engineered covers are used in the Selected Remedy. Specifically, engineered covers meeting the requirements of 35 IAC § 724 compliant caps will be installed over Sites O, Q North, Q Central, Q South, R, and S, and 35 IAC § 807 caps will be installed over Site P.

Under 40 CFR § 761.61(c), PCB remediation waste may be disposed of in a manner other than prescribed under Section 761.61(a) or (b), provided EPA determines that the method of disposal does not result in an unreasonable risk of injury to health or the environment. The risks associated with PCBs at the Sauget Area 2 Site are for dermal contact and incidental ingestion of

¹⁶ Principal threat waste is a source material that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur.

¹⁷ For a description of the GMCS, see footnote 3.

¹⁸ Engineering controls encompass a variety of engineered and constructed physical barriers (e.g., soil capping, sub-surface venting systems, mitigation barriers, fences) to contain and/or prevent exposure to contamination on a property.

surface soils at Site O and Site S to an outdoor industrial worker, and with subsurface soils and waste at Sites O, P, Q North, R, and S through dermal contact, incidental ingestion, and inhalation of particulate matter in excavation for a construction worker. Engineered caps and institutional and access controls will address these risks due to PCBs at the Site by eliminating the direct contact exposure pathway. PCBs were not identified as a contaminant of potential concern for vapor intrusion; therefore PCBs do not present a vapor intrusion risk.

The Selected Remedy set forth in the Sauget Area 2 OU1 ROD implements both containment and treatment remedies. Specifically, the 35 IAC § 724 compliant caps and 35 IAC § 807 caps prevent or minimize human exposure, infiltration of water, and erosion in accordance with 40 C.F.R. § 761.61(a)(7)¹⁹. The additional remedy components of the Selected Remedy at the Sauget Area 2 Site include NAPL recovery at Site P; removal and off-Site treatment and disposal of intact drums at Site Q South; in-situ soil vapor extraction at Site Q Central and Site S; vapor mitigation at Site P and Site Q North; and institutional controls placed on Sauget Area 2 Sites O, P, Q, R, and S to prevent interference with the remedy by future users. As discussed above, PCB concentrations in groundwater occur only sporadically and at comparatively low concentrations both upgradient and downgradient of the disposal areas, throughout the aquifer. In any case, impacted groundwater from Sauget Area 2 moves toward the west, toward the Mississippi River, and also most of the groundwater that might reach the River is captured and treated by the GMCS.

The Selected Remedy is expected to achieve substantial and long-term risk reduction through treatment, it is expected to prevent future exposure to currently contaminated soils and groundwater, and it is expected to allow the property to be used for the reasonably anticipated future land use, which is industrial. Based on the information provided, the containment and treatment remedies for the Sauget Area 2 Sites O, P, Q, R, and S will ensure that the PCBs remaining in the subsoils in Sauget Area 2 will not pose an unreasonable risk of injury to health or the environment.

EPA's TSCA 40 CFR § 761.61(c) determination memorandum is included in Appendix F, and is based on EPA's finding that after the remedy selected in this ROD is implemented, the PCB-contaminated soils remaining on-Site will not pose an unreasonable risk of injury to health or the environment.

Floodplain Regulations

Alternatives QN2, QN3, QN4, QN5, QC2, QC3, QC4, QS2, QS3, QS4, R2, and R3 are located on the wet side of the levee and involve the placement of fill and other cover materials in the

¹⁹ Under the Selected Remedy, the 35 IAC § 724 cap will meet the performance standards of a fully designed RCRA Subtitle C cap, except the component stating the need to provide for long-term minimization of migration of liquids (through the placement of an impermeable cap). EPA determined that this component of the Section 724 cap is not appropriate because an impermeable cap would not affect significant change on the rate of leaching in the groundwater due to the physical conditions at the Site.

Mississippi River floodway. For these alternatives, placement of the cover system must not adversely increase the flood elevation and velocities associated with reductions in floodway storage capacity (17 IAC Part 3700, Construction in Floodways of Rivers, Lakes, and Streams).

The ARARs that have been identified for the Selected Remedy in this ROD are listed in Appendix B.

2.10.3 - Long-term Effectiveness and Permanence

The evaluation of alternatives under this criterion addresses the results of a remedial action in terms of the risk remaining at the site after response objectives have been met. All of the alternatives, except the No Action alternatives, provide effective and long-term protection. Alternatives O2, O3, O4, P2, P3, P4, QN2, QN3, QN4, QN5, QC2, QC3, QC4, QS2, QS3, QS4, R2, R3, S2, S3, and S4 are effective, permanent remedial alternatives that meet the RAOs for Sauget Area 2. Alternatives O2, O4, P2, P4, QN2, QN3, QN4, QN5, QC2, QC4, QS4, R2, R3, S2, and S4 provide a similar measure of long-term effectiveness and permanence after construction of the engineered covers is complete. Alternatives P3, QC3, QS2, QS3, and S3 provide a higher degree of effectiveness by reducing COCs through treatment. Going forward, all aspects of the Selected Remedy will be the subject of operation and maintenance requirements to ensure the long-term effectiveness of the remedy.

2.10.4 - Reduction of Toxicity, Mobility, or Volume through Treatment

This criterion addresses the preference for selecting remedial actions that use treatment technologies that permanently and significantly reduce the toxicity, mobility, or volume of the hazardous substances. This preference is satisfied when treatment is used to reduce the principal threats at a site through destruction of toxic contaminants, reduction of the total mass of toxic contaminants, irreversible encapsulation, or reduction of total volume of contaminated media.

Previous removal actions conducted by EPA at Site Q Central and Site Q South already have removed principal threat wastes by excavating and disposing off-Site approximately 3,271 drums and 14,000 tons of high-level PCB contaminated soil.

Implementation of the GMCS for the Sauget Area 2 interim groundwater remedy, which was designed to abate adverse impacts on the Mississippi River resulting from the discharge of groundwater contaminated from Sauget Area 1 and 2 sites and nearby facilities, has been effective in capturing and treating 98 percent of mass flux from impacted groundwater from the Sauget Area 2 Sites and 94 percent of the total plume mass flux from Sauget Area 1, Sauget Area 2, Clayton Chemical, and W.G. Krumrich facility which would have migrated into the Mississippi River without the GMCS.

For Site O, Alternative O3 provides treatment through phytotechnology to reduce the volume of constituents in Site O. However, after analysis, it was determined that not all Site O constituents are amenable to phytoremediation due to specific compounds in the waste material which are toxic to vegetation. Therefore, treatment through phytotechnology would not be effective in

reducing the volume of constituents in Site O and was not chosen to be part of the Selected Remedy.

For Site P, Alternative P3 includes the collection, removal, and off-Site treatment of NAPL from leachate well LEACH P-1, which is treatment to reduce the toxicity, mobility, and volume of this principal threat material.

For Site Q Central, Alternative QC3 includes soil vapor extraction (SVE) at a potential mobile source area. The SVE system would remove 5,000 to 8,000 pounds of chlorobenzene as well as an additional mass of 1,4 dichlorobenzene.

For Site Q South, Alternative QS2 and QS3 include the removal and off-Site disposal of intact drums at the AT-Q-35 location.

For Site S, Alternative S3 includes SVE over the entire area of Site S. The SVE system would remove approximately 62,000 to 99,000 pounds of VOCs from the soil.

The interim remedy already implemented, the GCMS, captures and treats an estimated 210 million gallons of contaminated groundwater a year from the Sauget Area 1 Sites G, H, and I South; W.G Krummrich facility; the former Clayton Chemical facility; and Sauget Area 2 Sites O, Q North, Q Dogleg, R, and S.

Through treatment, Alternatives O3, P3, QC3, QS2, QS3, and S3 will further reduce the toxicity, volume, or mobility of the hazardous constituents present in the impacted media at the Site.

2.10.5 - Short-term Effectiveness

This criterion examines the effectiveness of the alternatives in protecting human health and the environment during implementation of the cleanup until the cleanup is complete. It considers protection of the community, workers, and the environment during the cleanup.

Short-term risks associated with implementation of all of the action alternatives are typical of a construction project that involves construction of engineered covers. These risks include general risks to construction workers as well as risks to the community due to significant truck traffic needed to bring the large volume of fill and cover material to Sites O, P, Q, R, and S. Other risks include the potential for dust emissions or stormwater runoff from areas of affected soils or waste during construction of the covers.

The potential risks to the community due to dust emissions and stormwater runoff will be managed through fugitive dust and stormwater control measures that will be developed during remedial design. The potential risks to site workers during remedy implementation will be managed by requiring adequate personal protection equipment (PPE) and routine safety procedures that will be specified in a health and safety plan to be developed during remedial design.

2.10.6 - Implementability

This criterion assesses the technical and administrative feasibility of an alternative and the availability of required goods and services. Technical feasibility considers the ability to construct and operate a technology and its reliability, the ease of undertaking additional remedial actions, and the ability to monitor the effectiveness of a remedy. Administrative feasibility considers the ability to obtain approvals from other parties or agencies and the extent of required coordination with other parties or agencies.

All of the action alternatives are possible to implement; however, the construction of RCRA Subtitle C covers poses extreme practical difficulties and regulatory obstacles. Construction of RCRA Subtitle C caps would significantly impact current business operations in the areas of Site Q North and Site Q Central. These areas are heavily used by multiple businesses and rely on movement of materials by rail, truck, and barge. Additionally, the construction of RCRA Subtitle C caps over Site Q North, Site Q Central, Site Q South, and Site R is not practicable from a regulatory standpoint, due to the lack of available land between the River and the levee from which to obtain borrow fill and meet a no net increase in flood potential in the area, in compliance with Illinois Department of Natural Resources floodplain requirements.

2.10.7 - Cost

This criterion evaluates the capital and operation and maintenance costs of each alternative. Present-worth costs are presented to help compare costs among alternatives with different implementation times.

The present worth costs for the alternatives are presented within the descriptions of alternatives in Section 2.9.2 of this ROD. The information in the cost estimate summary is based on the best available information regarding the anticipated scope of the remedial alternative. Changes in the cost elements are likely to occur as a result of new information and data collected during the remedial design phase. Major changes may be documented in the form of a memorandum in the Administrative Record file, and Explanation of Significant Differences (ESD), or a ROD amendment. The detailed cost estimates and associated assumptions for all alternatives are in the FS within the Administrative Record. The estimates are within a range of accuracy of +50 to -30 percent.

Table 41 in Section 2.10.9 provides a summary of the costs associated with each alternative.

2.10.8 - State/Support Agency Acceptance and Community Acceptance

State/support agency acceptance considers the state's preferences among or concerns about the alternatives, including comments on regulatory criteria or proposed use of waivers. Community acceptance considers the community's preferences or concerns about the alternatives.

The State of Illinois supports the selection of Alternatives O2, P3, QN2, QC3, QS3, R2, and S3 as the Selected Remedy. It is expected that the State will provide a concurrence letter in the near future.

During the public comment period, the community expressed no adverse opinions applying to the actions required by the Selected Remedy (Alternatives O2, P3, QN2, QC3, QS3, R2, and S3). A complete list of the public comments and EPA's response to the comments is contained in the *Responsiveness Summary*, which is Part 3 of this ROD. In addition, the transcript from the Proposed Plan public meeting is included in the Administrative Record.

2.10.9 – Comparative Analysis Summary

Table 41 provides a summary of the comparative analysis of the alternatives described in Sections 2.10.1 through 2.10.8, above. The alternative highlighted in grey is the Selected Remedy.

Table 41: Comparative Analysis Summary Table					
Alternative	Meets RAOs	Meets Threshold Evaluation Criteria		Time to Implement (Yrs)	Estimated 30-Year Present Worth Cost
		Overall Protection	Compliance with ARARS		
Alternative O1: No Action	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	\$0
Alternative O2: 35 IAC § 724 Compliant Soil Cover Over Identified Waste Areas and Institutional and Access Controls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	6 - 9	\$6.3M
Alternative O3: Phytotechnology in Potential Mobile Source Areas, 35 IAC § 724 Compliant Soil Cover Over Remainder of Identified Waste Areas, and Institutional and Access Controls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	6 - 9	\$5.8M
Alternative O4: RCRA Subtitle C Designed Cover Over Identified Waste Areas and Institutional and Access Controls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	7-11	\$16.2M
Alternative P1: No Action	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	\$0
Alternative P2: Asphalt Cover Mobile Source Area (SA-P-3/AT- P-5), 35 IAC § 807 Solid Waste Landfill Cover Over Remainder of Identified Waste Areas, Vapor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5 - 8	\$2.6M

Table 41: Comparative Analysis Summary Table					
Alternative	Meets RAOs	Meets Threshold Evaluation Criteria		Time to Implement (Yrs)	Estimated 30-Year Present Worth Cost
		Overall Protection	Compliance with ARARS		
Intrusion Mitigation and Institutional and Access Controls					
Alternative P3: NAPL Collection at Well (LEACH-P-1), Asphalt Cover Mobile Source Area (SA-P-3/AT-P-5), 35 IAC § 807 Solid Waste Landfill Cover Over Remainder of Identified Waste Areas, Vapor Intrusion Mitigation and Institutional and Access Controls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5 - 8	\$2.9M
Alternative P4: Asphalt Cover Mobile Source Area (SA-P-3/AT-P-5), RCRA Subtitle C Cover Over Remainder of Identified Waste Areas, Vapor Intrusion Mitigation and Institutional and Access Controls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	6 - 9	\$5.2M
Alternative QN1: No Action	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	\$0
Alternative QN2: 35 IAC § 724 Compliant Crushed Rock Cover Over Dogleg Area, Vapor Intrusion Mitigation, and Institutional and Access Controls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5 - 8	\$1.3M
Alternative QN3: RCRA Subtitle C Designed Cover Over Dogleg Area, Vapor Intrusion Mitigation, Institutional and Access Controls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7 - 11	\$12.8M
Alternative QN4: RCRA Subtitle C Designed Cover Over Identified Waste Areas, Vapor Intrusion Mitigation, and Institutional and	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	10 - 14	\$33.4M

**Table 41: Comparative Analysis
Summary Table**

Alternative	Meets RAOs	Meets Threshold Evaluation Criteria		Time to Implement (Yrs)	Estimated 30-Year Present Worth Cost
		Overall Protection	Compliance with ARARS		
Access Controls					
Alternative QN5: 35 IAC § 724 Compliant Crushed Rock Cover Over Identified Waste Areas, Vapor Intrusion Mitigation, and Institutional and Access Controls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	6 - 9	\$3.1M
Alternative QC1: No Action	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	\$0
Alternative QC2: 35 IAC § 724 Compliant Crushed Rock Cover Over Identified Waste Areas, Shoreline Erosion Protection, and Institutional and Access Controls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	6 - 9	\$2.1M
Alternative QC3: SVE at Mobile Source Area (AT-Q32), 35 IAC § 724 Compliant Crushed Rock Cover Over Identified Waste Areas, Shoreline Erosion Protection, and Institutional and Access Controls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	6 - 9	\$2.8M
Alternative QC4: RCRA Subtitle C Designed Cover Over Identified Waste Areas, Shoreline Erosion Protection, and Institutional and Access Controls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	10 - 15	\$39.5M
Alternative QS1: No Action	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	\$0
Alternative QS2: Removal of Intact Drums at AT-Q35, 35 IAC § 724 Compliant Cover Over Identified Risk Areas, and	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5 - 8	\$2.0M

**Table 41: Comparative Analysis
Summary Table**

Alternative	Meets RAOs	Meets Threshold Evaluation Criteria		Time to Implement (Yrs)	Estimated 30-Year Present Worth Cost
		Overall Protection	Compliance with ARARS		
Institutional and Access Controls					
Alternative QS3: Removal of Intact Drums at AT-Q35, 35 IAC § 724 Compliant Cover Over Identified Waste Areas, and Institutional and Access Controls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5 - 9	\$4.5M
Alternative QS4: RCRA Subtitle C Designed Over Identified Waste Areas, and Institutional and Access Controls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8 - 12	\$8.7M
Alternative R1: No Action	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	\$0
Alternative R2: 35 IAC § 724 Compliant Soil Cover Over Entire Site and Institutional and Access Controls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	6 - 9	\$2.0M
Alternative R3: RCRA Subtitle C Designed Cover Over Entire Site and Institutional and Access Controls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8 - 11	\$9.2M
Alternative S1: No Action	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	0	\$0
Alternative S2: 35 IAC § 724 Compliant Soil Cover Over Entire Site and Institutional and Access Controls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	4 - 7	\$0.32M
Alternative S3: In-Situ Treatment with SVE of Mobile Source Area, 35 IAC § 724 Compliant Soil Cover Over Entire Site and Institutional and Access Controls	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5 - 8	\$1.0M
Alternative S4: RCRA Subtitle C	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5 - 9	\$0.67M

Table 41: Comparative Analysis Summary Table					
Alternative	Meets RAOs	Meets Threshold Evaluation Criteria		Time to Implement (Yrs)	Estimated 30-Year Present Worth Cost
		Overall Protection	Compliance with ARARS		
Designed Cover Over Entire Site and Institutional and Access Controls					

2.11 – Principal Threat Waste

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site, wherever practicable (see 40 CFR § 300.430(a)(1)(iii)(A)). Identifying principal threat wastes combines concepts of both hazard and risk. In general, principal threat wastes are those source materials considered to be highly toxic or highly mobile which generally cannot be contained in a reliable manner or will present a significant risk to human health or the environment should exposure occur. Conversely, low-level threat wastes are those source materials that generally can be reliably contained and that will present only a low risk in the event of exposure. The manner in which principal threats are addressed generally will determine whether the statutory preference for treatment as a principal element is satisfied.

Wastes that generally will be considered to constitute principal threats include but are not limited to the following:

- **Liquid source material** - wastes contained in drums, lagoons or tanks, or free product in the subsurface (i.e., non-aqueous phase liquids) containing contaminants of concern (generally excluding groundwater).
- **Mobile source material** - surface soil or subsurface soil containing high concentrations of chemicals of concern that are (or potentially are) mobile due to wind entrainment, volatilization (e.g., volatile organic compounds), surface runoff, or subsurface transport.
- **Highly toxic source material** - buried, drummed non-liquid wastes; buried tanks containing non-liquid wastes; or soils containing significant concentrations of highly toxic materials.

Wastes that generally will not constitute principal threats include but are not limited to the following:

- **Non-mobile contaminated source material of low to moderate toxicity** - surface soil containing chemicals of concern that generally are relatively immobile in air or

groundwater (i.e., non-liquid, low volatility, low leachability contaminants such as high molecular weight compounds) in the specific environmental setting.

- **Low toxicity source material** - soil and subsurface soil concentrations not greatly above reference dose levels or that present an excess cancer risk near the acceptable risk range if exposure were to occur.

To protect human health and the environment, a combination of methods would be used to address the principal threat wastes observed at Site P, Q North, Q South, and R. Small quantities of principal threat wastes were observed in the following locations: Site P, NAPL observed in Trench AT-P-4 and well LEACH P-1; Site Q North, NAPL was observed at Sonic-5 and well LEACH-Q-1; Site Q South, two intact drums were found where potential NAPL leaked into the trench from the drums; and Site R, NAPL was observed at eight locations in Site R. Alternatives P3, QS2, and QS3 address the areas on Sites P and Q South by treating the recovered NAPL from Site P by off-Site incineration and removal and off-Site disposal of intact drums located on Site Q South. The NAPL identified on Site Q North and Site R are captured and treated by the GMCS.

To address the remaining low-level threat waste, engineering controls²⁰ in the form of engineered covers will be used to eliminate the direct contact exposure pathway. Engineered covers meeting the requirements of 35 IAC § 724 compliant caps will be installed over Sites O, Q North, Q Central, Q South, R, and S; and 35 IAC § 807 caps will be installed over Site P.

2.12 – Selected Remedy

The Selected Remedy for OU1 of the Saugat Area 2 Site, in addition to the continued operation of the GCMS, consists of the following alternatives:

- Selected Alternative for Site O and O North: Alternative O2: 35 IAC § 724 Compliant Soil Cap Over Identified Waste Areas and Institutional and Access Controls;
- Selected Alternative for Site P: Alternative P3: Collection, Treatment, and Off-Site Disposal of NAPL at Well (LEACH P-1), Asphalt Cap over Potentially Mobile Source Area (SA-P-3/AT-P-5), 35 IAC § 807 Solid Waste Landfill Cap Over Remainder of Identified Waste Areas, Vapor Intrusion Mitigation, and Institutional and Access Controls;
- Selected Alternative for Site Q North: Alternative QN2: 35 IAC § 724 Compliant Crushed Rock Cap Over Dogleg Area, Vapor Intrusion Mitigation, and Institutional and Access Controls;
- Selected Alternative for Site Q Central: Alternative QC3: SVE at Potentially Mobile Source Area (AT-Q32), 35 IAC § 724 Compliant Crushed Rock Cap Over Identified Waste Areas, Shoreline Erosion Protection, and Institutional and Access Controls;

²⁰ Engineering controls encompass a variety of engineered and constructed physical barriers (e.g., soil capping, sub-surface venting systems, mitigation barriers, fences) to contain and/or prevent exposure to contamination on a property.

- Selected Alternative for Site Q South and Q South Ponds: Alternative QS3: Removal of Intact Drums at AT-Q35, 35 IAC § 724 Compliant Cap Over Identified Waste Areas, and Institutional and Access Controls;
- Selected Alternative for Site R: Alternative R2: 35 IAC § 724 Compliant Soil Cap Over Entire Site, and Institutional and Access Controls; and
- Selected Alternative for Site S: Alternative S3: In-Situ SVE of Potentially Mobile Source Area, 35 IAC § 724 Compliant Soil Cap Over Entire Site, and Institutional and Access Controls.

Summary of the Rationale for the Selected Remedy

The Selected Alternatives (O2, P3, QN2, QC3, QS3, R2, and S3), in conjunction with the continued operation of the GCMS, were selected over other alternatives because they are expected to achieve substantial and long-term risk reduction through treatment, expected to prevent future exposure to currently contaminated soils and groundwater, and expected to allow the property to be used for the reasonably anticipated future land use, which is industrial.

The Selected Remedy will address the significant sources of on-going contamination to groundwater through recovery, treatment and off-Site disposal of NAPL pumped from Site P, removal and off-Site disposal of intact drums located on Site Q South, and treatment of potentially mobile source areas through in-site treatment through soil vapor extraction at Site Q Central.

Based on the information collected and studied in the RI/FS conducted for the Site, EPA and the State of Illinois believe the selected remedy will be: (1) protective of human health and the environment, (2) comply with ARARs, (3) be cost-effective, and (4) utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. Because it will treat the source materials constituting principal threats, the remedy also meets the statutory preference for the selection of a remedy that involves treatment as a principal element.

Description of the Protectiveness Achieved by the Selected Remedy

The Selected Remedy achieves protectiveness by off-Site incineration of the NAPL recovered from Site P and removal and off-Site treatment and disposal of intact drums at Site Q South, plus in-situ treatment through soil vapor extraction at Site Q Central. The Selected Remedy provides a significantly higher degree of treatment compared to the other alternatives. Engineering controls will be used to address the remaining low-level threat waste by eliminating the direct contact exposure pathway. Engineered caps meeting the requirements of 35 IAC § 724 compliant caps will be installed over Sites O, Q North, Q Central, Q South, R, and S. Engineered caps meeting the requirements of 35 IAC § 807 will be installed over specific areas of Site P.

Summary of the Estimated Remedy Costs

The estimated cost of implementing the Selected Remedy for the Sauget Area 2 Site, OU1 is \$20.8 million. A detailed cost estimate for the Selected Remedy, Alternatives O2, P3, QN2, QC3, QS3, R2, and S3, is included as Appendix C. The cost estimate is based on the best available information regarding the anticipated scope of the remedial alternative. Changes in the cost elements are likely to occur as a result of new information and data that will be collected during the remedial design phase. This is an order-of-magnitude engineering cost estimate that is expected to be within +50 to -30 percent of the actual project cost.

Expected Outcome of the Selected Remedy

The expected outcome of the Selected Remedy is that potential receptors in Sauget Area 2 Sites will no longer be exposed to soil or groundwater source areas that pose a threat to human health or the environment. The land use of the properties within the Site will remain unchanged.

2.13 – Statutory Determinations

Under CERCLA Section 121 and the NCP, the lead agency must select remedies that are protective of human health and the environment, comply with applicable or relevant and appropriate requirements (unless a statutory waiver is justified), are cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as a principal element and a bias against off-site disposal of untreated wastes. The following sections discuss how the Selected Remedy meets these statutory requirements.

Protection of Human Health and the Environment

In conjunction with the continued operation of the GCMS, implementation of the Selected Remedy, Alternatives O2, P3, QN2, QC3, QS3, R2, and S3, will be protective of human health and the environment through the off-Site incineration of the NAPL recovered from Site P; removal and off-Site treatment and disposal of intact drums at Site Q South; in-situ treatment with SVE at Site Q Central and Site S; elimination of the direct contact exposure pathway through installation of 35 IAC § 724 compliant caps at Sites O, Q North, Q Central, Q South, Site R, and Site S, and installation of 35 IAC § 807 compliant caps at Site P; and placement and enforcement of institutional and access controls at all of the Area 2 sites.

The Site-specific RAOs were developed to protect current and future receptors that are potentially at risk from exposure to the soil and groundwater source contaminants at OU1. The Selected Remedy will achieve the RAOs. Additionally, institutional and access controls will be employed at Sites O and Q North, P, Q North, Q Central, Q South, R, and S in order to ensure that the remedy remains protective.

Compliance with Applicable or Relevant and Appropriate Requirements

Section 121(d) of CERCLA requires that Superfund remedial actions meet ARARs. Appendix B provides a list of all ARARs that have been identified for the remedial action. The Selected Remedy will comply with the identified ARARs.

Cost-Effectiveness

EPA has concluded that the Selected Remedy is cost-effective and represents a reasonable value for the money to be spent. In making this determination, the following definition was used: "A remedy shall be cost-effective if its costs are proportional to its overall effectiveness" (see 40 CFR Section 300.430(f)(1)(ii)(D)). This determination was made by evaluating the "overall effectiveness" of those alternatives that satisfied the threshold criteria (i.e., were both protective of human health and the environment and ARAR-compliant). Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness). Overall effectiveness was then compared to costs to determine cost-effectiveness. The relationship of the overall effectiveness of the Selected Remedy was determined to be proportional to its costs. The Selected Remedy therefore represents a reasonable value for the money to be spent.

Utilization of Permanent Solutions and Alternative Treatment Technologies (or Resource Recovery Technologies) to the Maximum Extent Practicable

EPA has determined that the Selected Remedy for OU1 represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner. Of those alternatives that are protective of human health and the environment and comply with ARARs, EPA has determined that the Selected Remedy provides the best balance of trade-offs in terms of the five balancing criteria, while also considering the statutory preference for treatment as a principal element and bias against off-Site disposal, and considering state and community acceptance. The Selected Remedy includes off-Site incineration of the NAPL recovered from Site P and removal and off-Site treatment and disposal of intact drums from Site Q South, plus in-situ treatment through soil vapor extraction at Site Q Central. To address the remaining low-level threat waste and to eliminate the direct contact exposure pathway, engineering controls will be used. Engineered caps meeting the requirements of 35 IAC § 724 will be installed over Sites O, Q North, Q Central, Q South, Site R, and S; and 35 IAC § 807 compliant caps will be installed over Site P.

The Selected Remedy therefore provides a permanent solution for both the low-level and principal threat wastes at OU1 that is effective in the long term and achieves significant reductions in contaminant mass flux to groundwater through treatment of source areas and containment of wastes.

Preference for Treatment as a Principal Element

In addition to the capture and treatment of contaminated groundwater and NAPL by virtue of the GCMS, the Selected Remedy will treat NAPL through off-Site incineration of the recovered NAPL from Site P and removal and off-Site treatment and disposal of intact drums from Site Q South, and will treat contaminants in-situ with SVE at Site Q Central. The Selected Remedy provides a significantly higher degree of treatment compared to the other alternatives. By utilizing treatment as a portion of the remedy, the Selected Remedy satisfies to the maximum extent practicable the statutory preference for remedies that employ treatment as a principal element.

Five-Year Review Requirements

Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-Site, at depth but above levels that allow for unlimited use and unrestricted exposure, EPA will conduct a statutory review within five years after initiation of the remedial action and every five years subsequent, to ensure that the remedy is, or will be, protective of human health and the environment.

2.14 – Documentation of Significant Changes

The Proposed Plan for OU1 was released for public comment on June 7, 2013. The Proposed Plan identified the following as the preferred alternatives:

- Selected Alternative for Site O and O North: Alternative O2: 35 IAC § 724 Compliant Soil Cap Over Identified Waste Areas and Institutional and Access Controls;
- Selected Alternative for Site P: Alternative P3: Collection, Treatment, and Off-Site Disposal of NAPL at Well (LEACH P-1), Asphalt Cap over Potentially Mobile Source Area (SA-P-3/AT-P-5), 35 IAC § 807 Solid Waste Landfill Cap Over Remainder of Identified Waste Areas, Vapor Intrusion Mitigation, and Institutional and Access Controls;
- Selected Alternative for Site Q North: Alternative QN2: 35 IAC § 724 Compliant Crushed Rock Cap Over Dogleg Area, Vapor Intrusion Mitigation, and Institutional and Access Controls;
- Selected Alternative for Site Q Central: Alternative QC3: SVE at Potentially Mobile Source Area (AT-Q32), 35 IAC § 724 Compliant Crushed Rock Cap Over Identified Waste Areas, Shoreline Erosion Protection, and Institutional and Access Controls;
- Selected Alternative for Site Q South and Q South Ponds: Alternative QS3: Removal of Intact Drums at AT-Q35, 35 IAC § 724 Compliant Cap Over Identified Waste Areas, and Institutional and Access Controls;
- Selected Alternative for Site R: Alternative R2: 35 IAC § 724 Compliant Soil Cap Over Entire Site, and Institutional and Access Controls; and

- Selected Alternative for Site S: Alternative S3: In-Situ SVE of Potentially Mobile Source Area, 35 IAC § 724 Compliant Soil Cap Over Entire Site, and Institutional and Access Controls.

After carefully reviewing all written and verbal comments submitted during the public comment period, EPA has determined that no significant changes to the remedy as originally identified in the Proposed Plan are necessary or appropriate.

Part 3 – Responsiveness Summary

The Proposed Plan for the Sauget Area 2 Site was released for public comment on June 7, 2013. EPA held a public meeting in Cahokia, Illinois on June 12, 2013, to describe the Proposed Plan and answer questions about the different cleanup alternatives. The public meeting also provided the community with an opportunity to comment on the proposed cleanup alternative and the other alternatives evaluated. EPA received one lengthy comment at the public meeting. No written comments were received during the public comment period. The comment was subdivided so that responses could be more easily understood.

3.1 – Stakeholder Comments and Lead Agency Responses

Comment: The commenter stated on all sites EPA lists a “no action” alternative, but failed to list a “remove wastes from the floodplain” alternative. Given the nature of the site in the floodplain and given the vulnerability of the levees and climate change impacts, the commenter strongly urged EPA to include alternatives for the removal of all waste in the floodplain.

Response: Alternatives that remove all soil and wastes with contamination were not considered technically or economically feasible as a result of the excessive excavation depths and the risks to workers and the community from such a massive excavation and disposal project. Further confirming this judgment is the fact that most of the waste from the various sites in Area 2 is located under the area groundwater table.

Comment (continued): The commenter asked how covering the contaminants in place rather than removing them entirely from the floodplain satisfy the Superfund evaluation criteria for long term effectiveness and permanence?

Response: See the response to the previous comment: excavation and removal of the waste, and its subsequent transport and disposal elsewhere (e.g., the permanent remedy), is not a viable alternative given the wastes’ magnitude and location under the water table in Area 2. The evaluation of long-term effectiveness and permanence of the cover alternatives is presented in the feasibility study Section 5.3. In general, the Selected Alternatives are considered to be effective in the long-term because the risks to human health and the environment following implementation are small and the potential for uncontrolled migration of wastes is minimal. Going forward, the remedies will be properly implemented and maintained to retain their effectiveness.

Comment (continued): The commenter stated there have been several sand boils in the Metro East levee system and the levee system is designed to protect the Sauget/Cahokia/East St. Louis area from the Mississippi River and asked the following: 1.) has EPA taken into account the present condition of the levee system with the Selected Alternatives, 2.) has EPA taken into account climate change, more intense rainfall, and snow storms resulting in higher river levels and their impacts on levees in choosing the Selected Alternatives.

Response: The U.S. Army Corps of Engineer's levee project is absolutely necessary to protect the people living in the surrounding area during a significant flooding event. EPA's analysis has tried to take into account the present and future condition of the levee, and future Site conditions. However, flooding from the Mississippi River and the effects from flooding cannot be prevented, but only mitigated to the extent possible given the location of the Site. The potential for failure of the levees would potentially affect Sites O, P, and S, while Sites Q and R are on the River side of the levees. However, large areas of principal threat waste are not found at Sites O, P, and S. The recommended alternatives for all three sites include engineered soil covers. These covers will provide additional protection from erosion of waste materials from these sites if the levees were to fail. Going forward, all remedies will be properly implemented, operated and maintained. Should a remedy be damaged or adversely affected by flooding, additional appropriate response measures will be implemented to ensure ongoing protectiveness.

Comment (continued): The commenter stated there are a number of relief wells proposed in the stretch from East St. Louis through Sauget and Cahokia. This has the potential to bring up DNAPLs to the surface, which totally negates all EPA's proposed alternatives. Despite EPA's plans to keep the contaminants in place and eliminate exposure to humans and wildlife, those efforts will be undone by the breaking up of contaminants in the groundwater. Additionally, how will the contamination brought to the surface by the levee repair project relief wells be managed?

Response: EPA is aware of the Corps of Engineers plans to use relief wells for levee protection. The levee wells will be unlikely to recover DNAPL because DNAPL was not encountered in close proximity to the levee (see RI Figure 5-26). Also, where DNAPL was encountered, it was not extensive and was residualized within the soil matrix where its mobility is limited. We believe that the levee project will make levee failure a far less likely eventuality. Aspects of the repair project, however, may lead to some pollutant discharges. Specifically, it is recognized that operation of the wells, may draw dissolved phase contamination in groundwater to the surface. However, the consequences of a levee failure would potentially result in much more serious and widespread environmental damage than the preventative measures called for in the operation of the levee wells.

Additionally, the levee repair relief wells will convey existing groundwater passively and not by pumping of the relief wells. According to the information provided by the Southwestern Illinois Flood Prevention District (SWIFPD) and the Illinois EPA's Bureau of Water (BOW) review of the Clean Water Act (CWA) Section 401 water quality certification application for its portion of the levee projects, the Mississippi River (River) is hydraulically connected to the adjoining alluvial aquifer system that comprises the

American Bottoms. When the River is not at flood stage, adjoining groundwater within the American Bottoms alluvial aquifer and surface water runoff naturally discharges to the River. This is a normal hydrologic process, unaffected by human activity. When the River elevation rises, hydrogeologic conditions change, and the River charges the adjoining aquifer and groundwater flow direction and gradients are reversed. In the presence of the existing levee, the same groundwater – hydraulically connected to a rising River – moves upwards toward the ground surface. This groundwater will move under, and sometimes through the levee as uncontrolled seepage and/or through sand boils, discharging to low areas such as sloughs, ponds and lakes, and drainage channels. This discharge of flood-induced groundwater to the surface has occurred throughout time, even in the absence of levee relief structures. This uncontrolled groundwater seepage flows as surface water back to the River. Under the above described basic hydrologic conditions, the levee improvement project by SWIFPD will not affect or change quality of water already discharging to the River. The groundwater (including all the groundwater constituents) discharges to the River now, has done so in the past, and will continue to reach the River with or without the implementation of the proposed levee project.

Naturally occurring metals (e.g. iron, manganese) are widespread throughout the American Bottoms aquifer, making a distinction between areas with metal concentrations of natural or man-made origin difficult. Groundwater concentrations of these metals are often found to be higher than associated surface waters given the interaction of groundwater with geological materials. It is expected that relief structure upwelling and subsequent pump station discharges would contain naturally occurring groundwater metals at concentrations that may be slightly higher than that of the streams and wetlands that would receive pump station discharges. However, the concentrations of these metals conveyed through relief structures is no different than the concentrations that would be found in uncontrolled upwelling that would occur in the absence of relief structures. For the SWIFPD project, naturally occurring concentrations of metals in pump station discharges would not result in surface water quality standard violations once discharged, as pump station discharges are intermittent in nature and only occur during flood conditions when mixing with floodwaters would allow for attainment of water quality standards.

The BOW reviewed groundwater sampling data, including metals, VOCs, and SVOCs, from wells near Sauget Area 2. According to the June 2008 EPA report entitled "First Five-Year Review Report, Sauget Area 2 Superfund Site, Sauget, Illinois" there are three distinct vertical stratification layers of total VOCs and total SVOCs concentrations at Site R, with concentrations decreasing with depth. The BOW also reviewed groundwater data that corroborates this information (i.e., shallower wells had higher concentrations of parameters while deeper wells had lower amounts). The proposed relief wells by SWIFPD will be screened at a depth of 63 to 94 feet, which corresponds with the deepest stratification layer. The applicant provided water quality information representative of the water at the depth of the water that will be discharged through relief structures. Groundwater that is passively conveyed from relief structures in this area would be discharged to the East St. Louis pump station and would be discharged directly into the

Mississippi River. Given the low concentrations of VOCs and SVOCs detected in well sampling from this area, and the large watershed area of the East St. Louis pump station, the BOW has determined that, for the SWIFPD project, discharges from this pump station will meet water quality standards. However, for the SWIFPD project, in the unexpected event that concentrations of these pollutants in pump station discharges are above water quality standards/criteria, mixing within the Mississippi River is anticipated to ensure compliance with these standards.

The CWA Section 401 water quality certification application for the Corps of Engineers portion of the levee repairs is currently under review by the BOW.

Comment (continued): The commenter expressed appreciation for EPA's proposal to restrict future access to the sites, but the groundwater pumping from the IDOT wells negates that restriction. The Southwestern Illinois Flood Prevention District plan is to repair the levees to get 100 year certification from the Federal Emergency Management Agency (FEMA) and the Corps so that development can continue in the floodplain. The Corps did not consider climate change in its equation to determine a 100 year event. Some scientists have suggested that the 100 year event is really just a seven year event. Getting certification by FEMA is expected by 2015. It could be many more years before the Corps has funding to repair the levees to the authorized level of protection said by the Corps variously to be a 500-year level or a 350-year level. Development in the floodplain will cause increased interior flooding, which will impact the Sauget area sites, and cause increased water on the landward side of the levee, coupled with higher river levels on the other side of the levee that will put the levees protecting the American Bottom at severe risk. In addition, we are in the New Madrid seismic zone and the area is at risk for severe liquefaction. Our levees were built on sand and not built to withstand an earthquake. Scientists say the New Madrid is due for a major event. Has EPA considered the potential for earthquakes and levee failure in the risk assessments or in choosing the Selected Alternatives?

Response: Specific recognition of the impact of earthquakes and levee failure on releases from the sites was in the form of taking into account the fact that the Sauget Area 2 Site is potentially prone to being saturated in water. Fortunately, the Sites protected by the levee (e.g., on the dry side of the levee), Sites O, P, and S, do not contain large areas of principal threat waste. In any case, the Selected Remedy's engineered caps for these sites will reduce the potential for release of contaminants to the environment if the levees were to fail. However, under any possible approach, flooding from the Mississippi River and the effects from flooding, or similarly, earthquake, cannot be prevented, but only mitigated to the extent possible given the location of the Site. Going forward, all remedies will be properly implemented, operated and maintained. Should a remedy be damaged or adversely affected by any event, response measures will be taken to ensure ongoing protectiveness.

Comment (continued): The commenter stated the Illinois EPA has already granted the Flood Prevention District Council (FPDC) a CWA Section 401 permit that allows the levee districts to pump groundwater from relief wells untreated into the river, including the Sauget Superfund area. Any treatment of water from relief wells in this area should be paid for by the PRPs of Sauget Areas 1 and 2 rather than by the levee districts and taxpayers. In addition, any barrier walls constructed by the Corps or the FPDC in the area of Sauget Areas 1 and 2 should be funded

by the PRPs, not taxpayers. They have caused the contamination and must bear the costs of dealing with the contaminants.

Response: See response above regarding the Illinois EPA's review of the CWA Section 401 water quality certification application. Sauget Area PRPs have funded or paid for all of the response actions that have taken place in Sauget Areas 1 and 2, including the construction of GCMS, and will continue to fund all required operation and maintenance activities associated with these response actions into the future.

Comment (continued): The commenter stated the risk assessments look at the different ways people may be exposed and then determine the potential health risks. Was a risk assessment performed to look at the potential of a levee breach?

Response: The potential for a levee breach emphasizes the need for the U.S. Army Corps of Engineer's levee project to minimize the risk of a breach. However, an in-depth assessment would not likely be meaningful because the alternative of removal is not viable, as discussed above. The Selected Remedy's engineered caps will reduce the potential for release of contaminants to the environment if the levees were to fail. In the event of a levee breach, the sites would be evaluated for the occurrence of erosion of the capping remedy and/or new or different potential risks from the release or possible release of wastes. If erosion and/or new risks from the release of waste were found, further investigation would be performed, along with evaluation and implementation of required repair or additional necessary response action.

Comment (continued): The commenter stated flood water carrying contaminants and perhaps scouring covered landfills could expose residents in Sauget and Cahokia to toxic waters. The contaminated flood water would also be carried downstream to other communities and in to water supplies and asked why EPA didn't determine natural resource damages before selecting cleanup alternatives?

Response: The potential for floodwaters scouring the landfills and causing a release to the river was evaluated and the results of the evaluation are documented in the Feasibility Study Attachment 5, "*Quantitative Analysis of Flood Velocities for Superfund Sites R and Q.*" The conclusion of the study was that flood velocities were not high enough to result in scouring of soil or waste. Under CERCLA, natural resource damages (NRD) relief is not part of the remedy selected by EPA. The potentially responsible parties work directly with natural resource trustees to resolve liability associated with NRD.

Comment (continued): The commenter stated number three of the evaluation criteria for superfund cleanup alternatives is long term effectiveness and permanence. How will the contamination be managed in the event of a levee breach?

Response: In the event of a levee breach, the sites would be evaluated for the occurrence of erosion of the capping remedy and the release or possible release of wastes. If erosion and/or the release of waste were found to have occurred, further investigation of the extent and deposition of the waste would be performed, along with evaluation, and implementation, of additional necessary response measures, or repair of the existing remedy.

Comment (continued): The commenter asked how will the contamination be managed in the event of an earthquake?

Response: In the event of an earthquake of significant magnitude, a visual inspection of the sites, at a minimum, would be performed. In addition, data from groundwater monitoring wells could be evaluated to determine any adverse effects from an earthquake. Adverse impacts on the remedy components would be analyzed, along with evaluation and implementation of additional remedial alternatives, and/or repair, as needed.

Comment (continued): The commenter requested that questions and answers from the question and answer period be part of the official record.

Response: A transcript of the questions posed during the presentation of information along with the answers given is included in the EPA's file and is part of the Administrative Record for the Sauget Area 2 Site.

Comment (continued): The commenter thanked all the agencies who have worked so hard for so long on these sites. The commenter continued to state how complex the site is, how horrific the contamination is and how difficult the decisions are, but the decisions EPA makes could have grave impacts upon the people of our communities, on those living downstream, on the fish and wildlife and the eco system. Additionally, the commenter stated those who have caused this contamination must be made to pay to clean it up and you must not allow the levee repair project to undo the safeguards EPA is trying to put in, otherwise all the work is for naught.

Response: EPA appreciates the thanks and will continue to inform the public as we move through design and construction of the Selected Remedy. EPA agrees with the commenter that Sauget Area 2 Site is complex. The magnitude of the Site's waste, over 4.5 million cubic yards, and the Site's location next to the River present very difficult challenges and EPA is doing its best under the authorities that are available under CERCLA. Sauget Area PRPs have cooperated with the State and federal efforts to address contamination in Areas 1 and 2. PRPs have either conducted, with EPA oversight, the investigatory and remedial measures taken on the Sauget Area 1 and 2 Sites so far, or have paid EPA for its costs in response actions it has taken. The PRPs have also paid for EPA and IEPA oversight costs expended in overseeing the conduct of administrative orders, agreements on consent, and consent decrees issued or entered for the Sites.

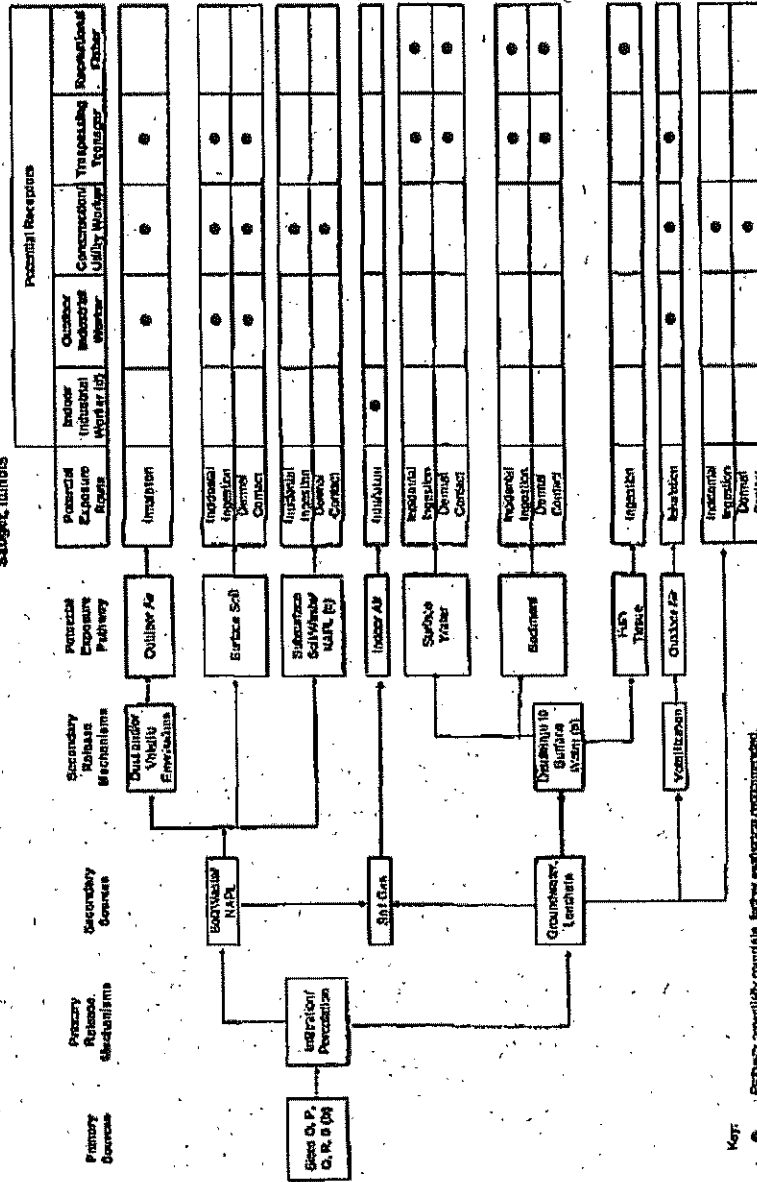
FIGURES

Figure 1: Sauget Area 2 Sites



Figure 2: Conceptual Site Model

Figure 5-1
Conceptual Site Model
Human Health Risk Assessment Protocol
Sauget Area 2
Sauget, Illinois



Key:

- Potentially possible, further evaluation recommended.
- (a) Industrial Area and Site O ponds will be evaluated separately.
- (b) Site O was divided into 3 sites (O, O North, O South). Site O was divided into 3 sites (O, O North, O South). Site O was divided into 3 sites (O, O North, O South).
- (c) Direct contact with non-aqueous phase liquid (NAPL) is not expected as the depth to NAPL exceeds typical vegetation depth.
- (d) Evaluated in a separate technical memorandum.

Figure 3: Generalized Geologic Cross Section

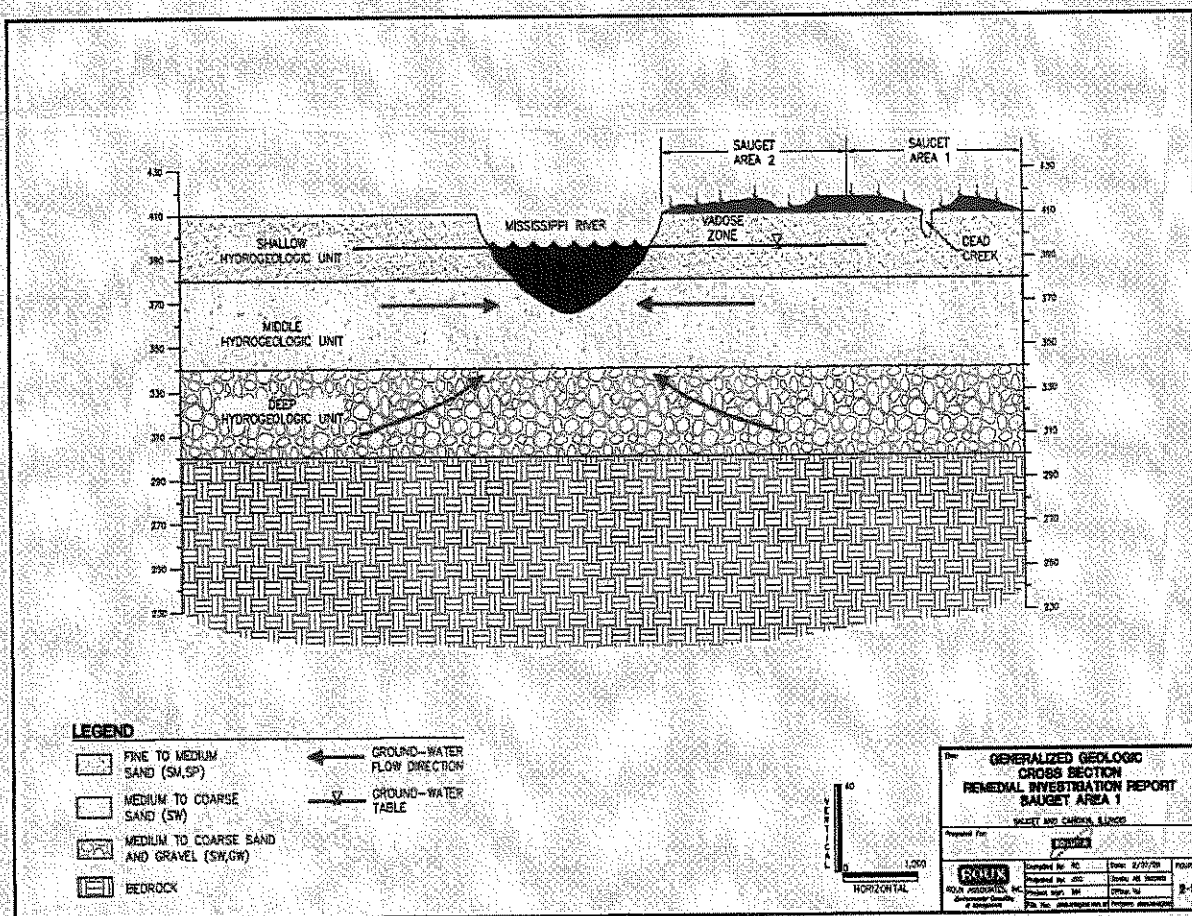


Figure 4: Site O: Alternatives O2/O4

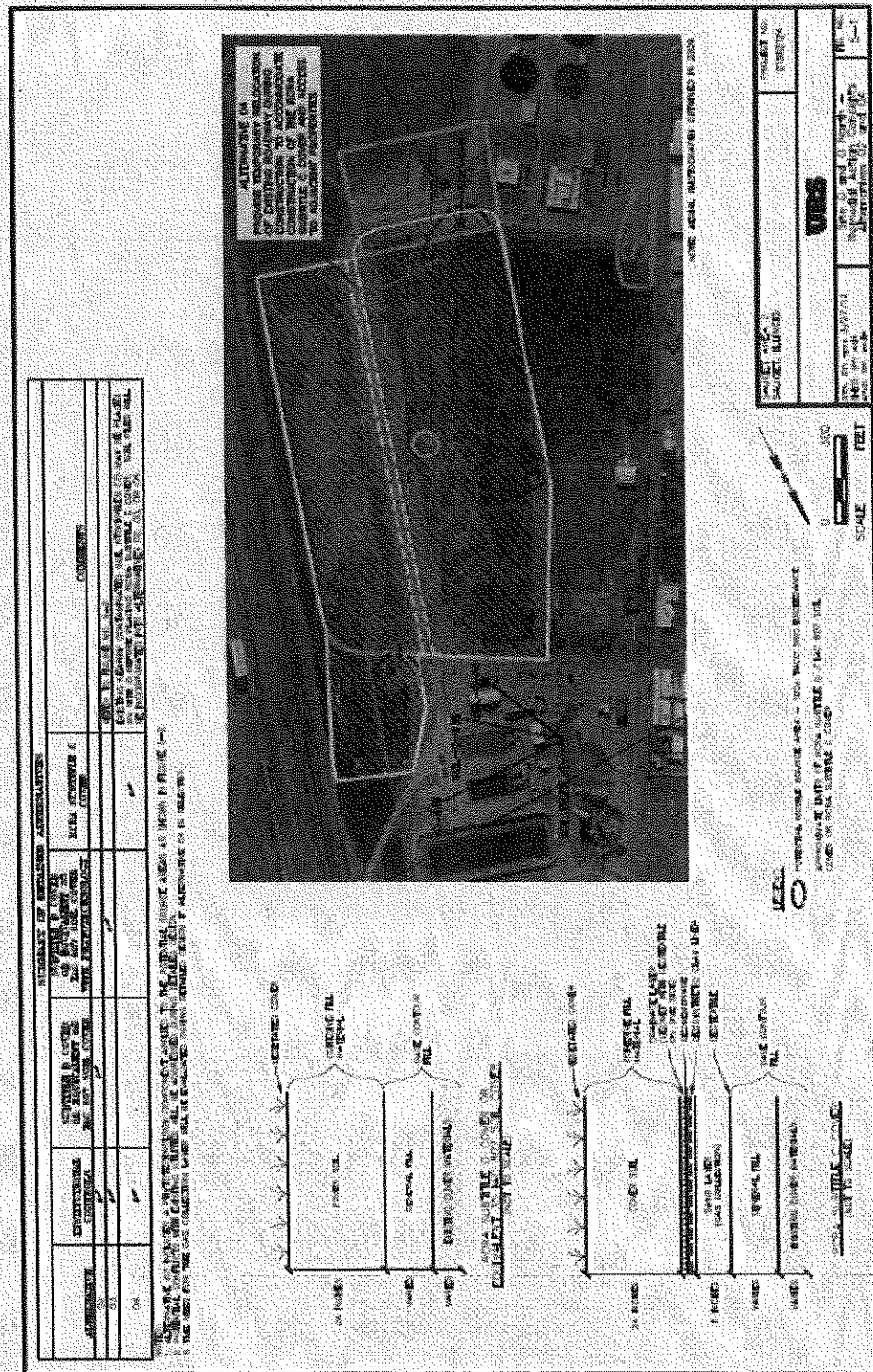


Figure 5: Site O: Alternative O3

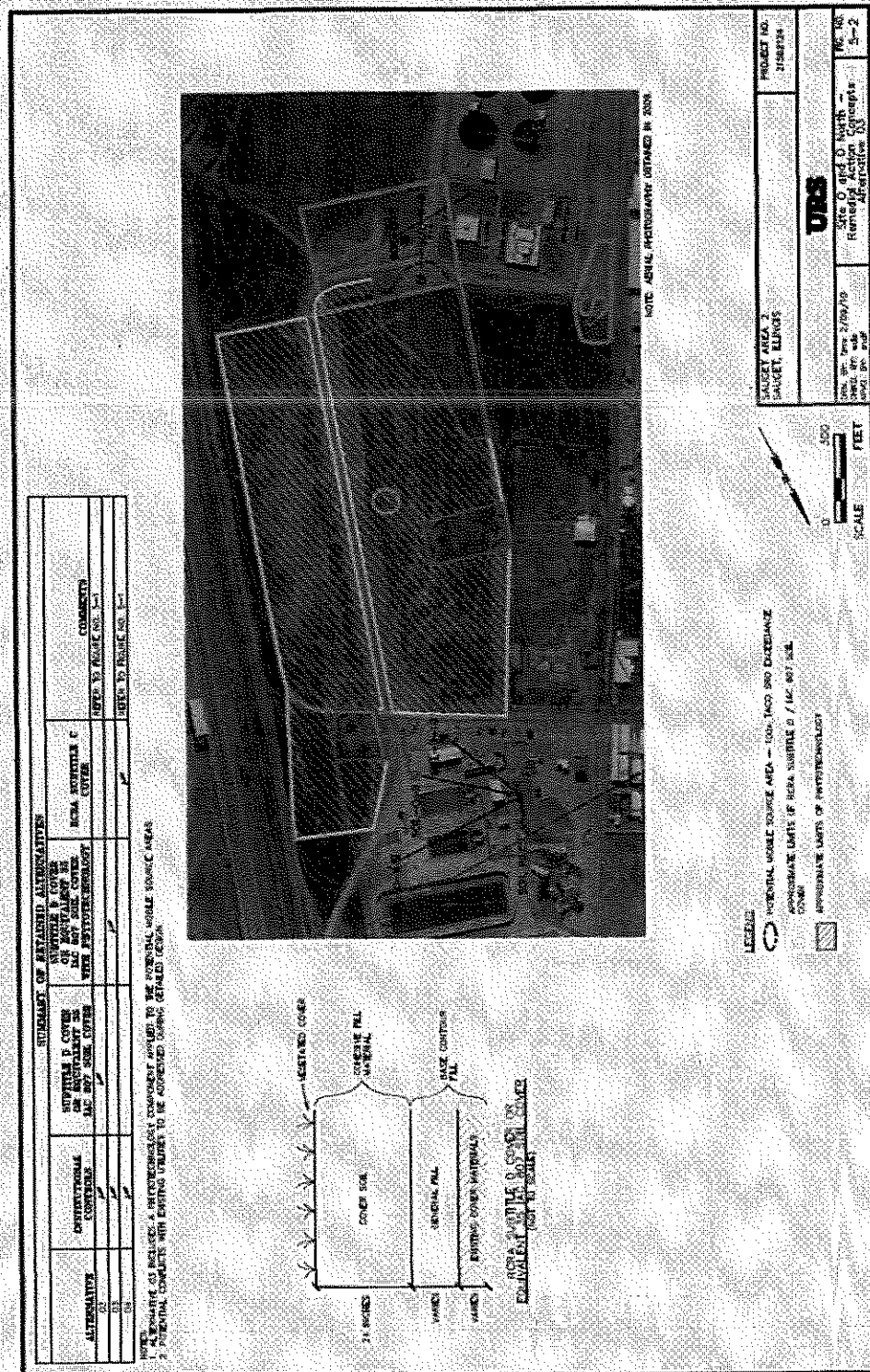
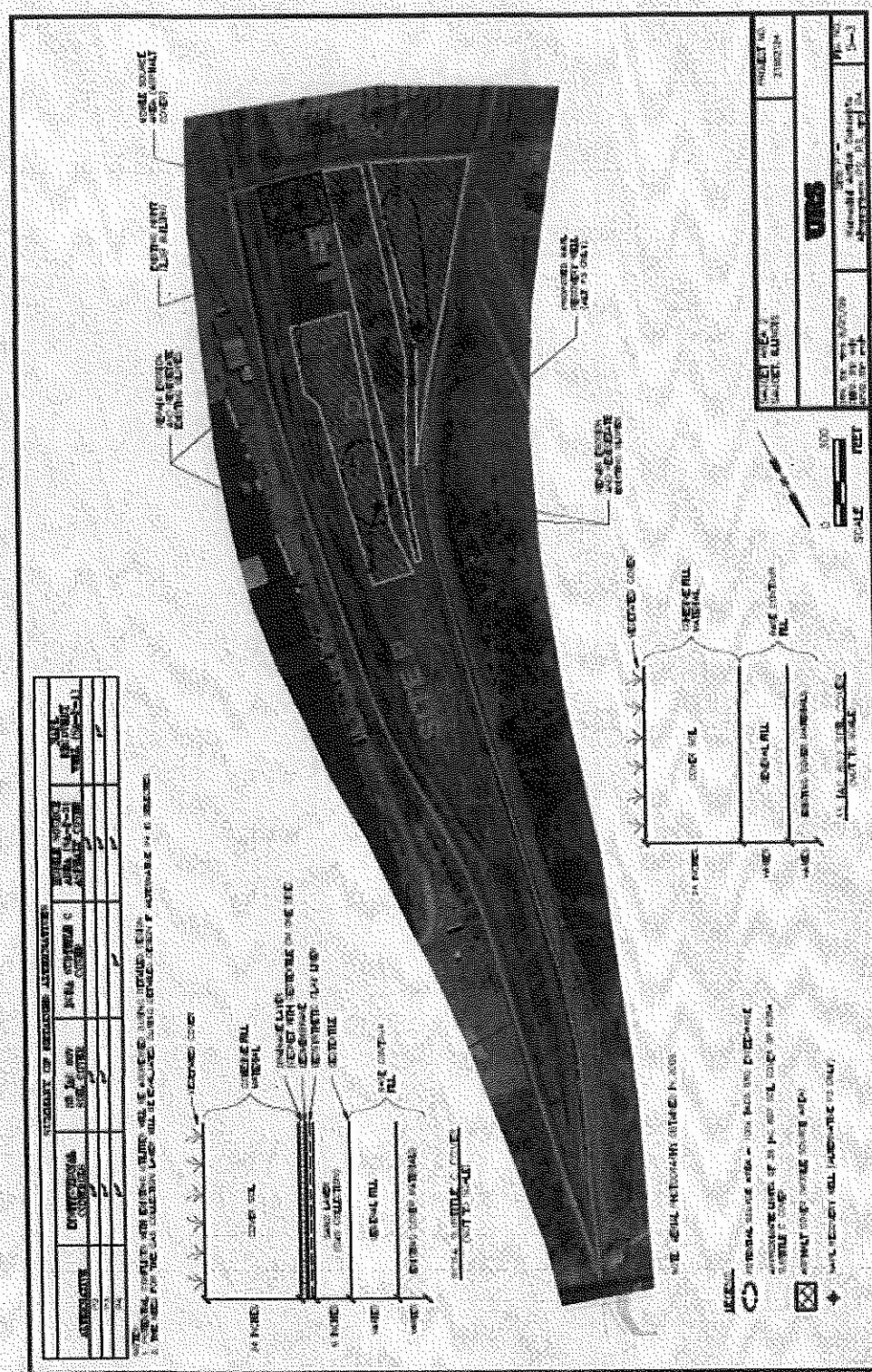


Figure 6: Site P: Alternatives P2, P3, P4



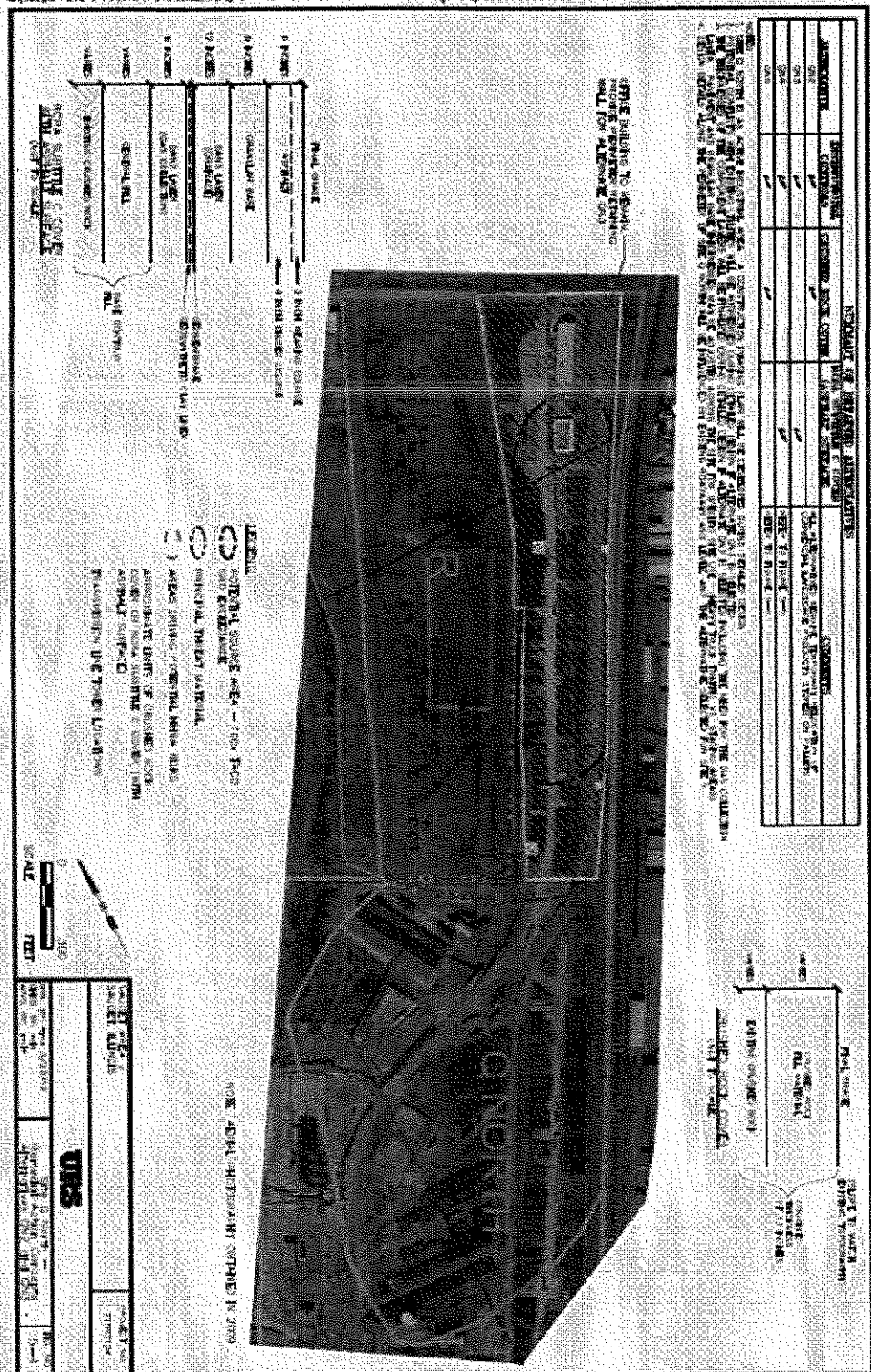
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Figure 8: Site Q North: Alternatives QN4/QN5

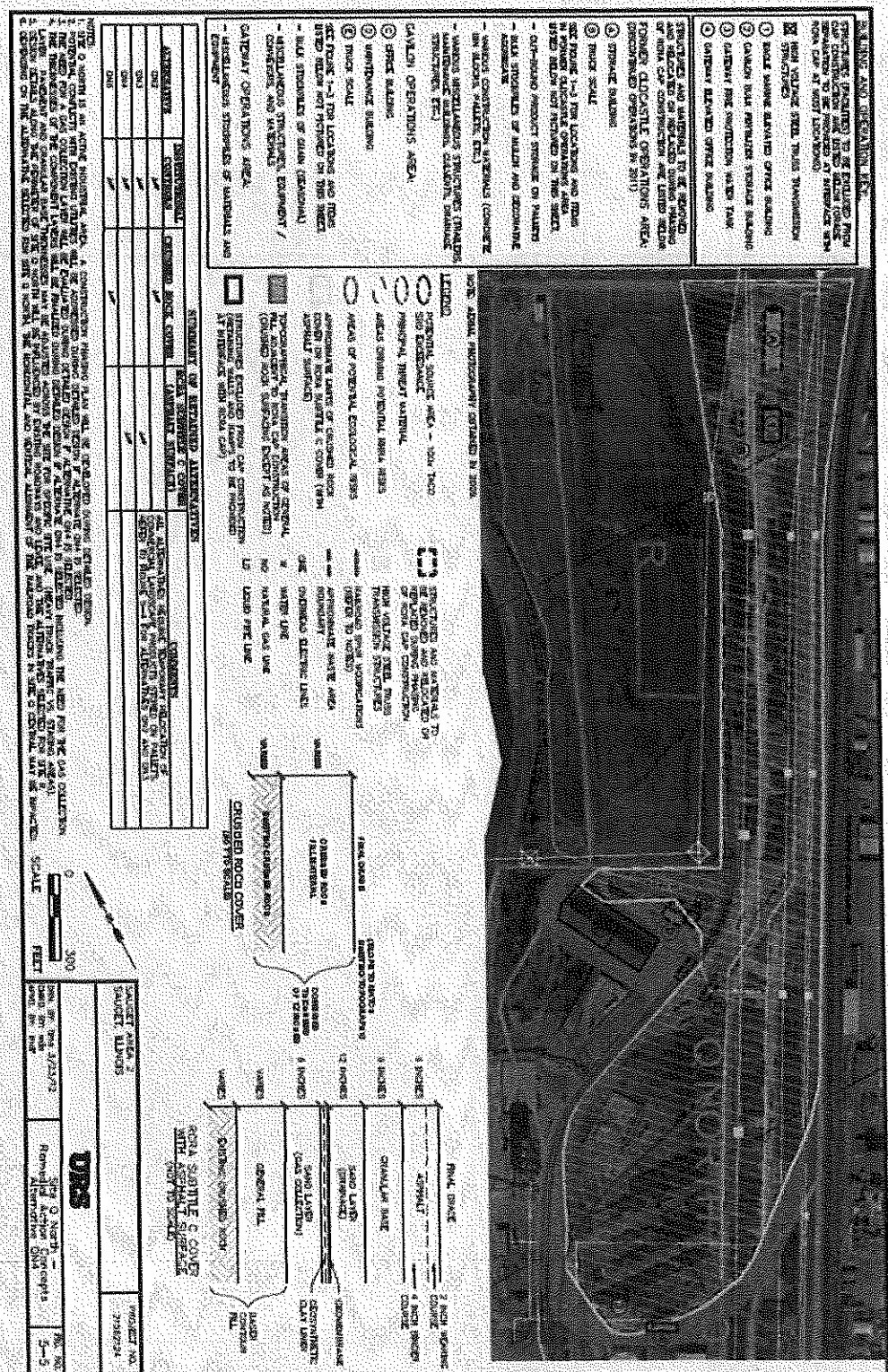
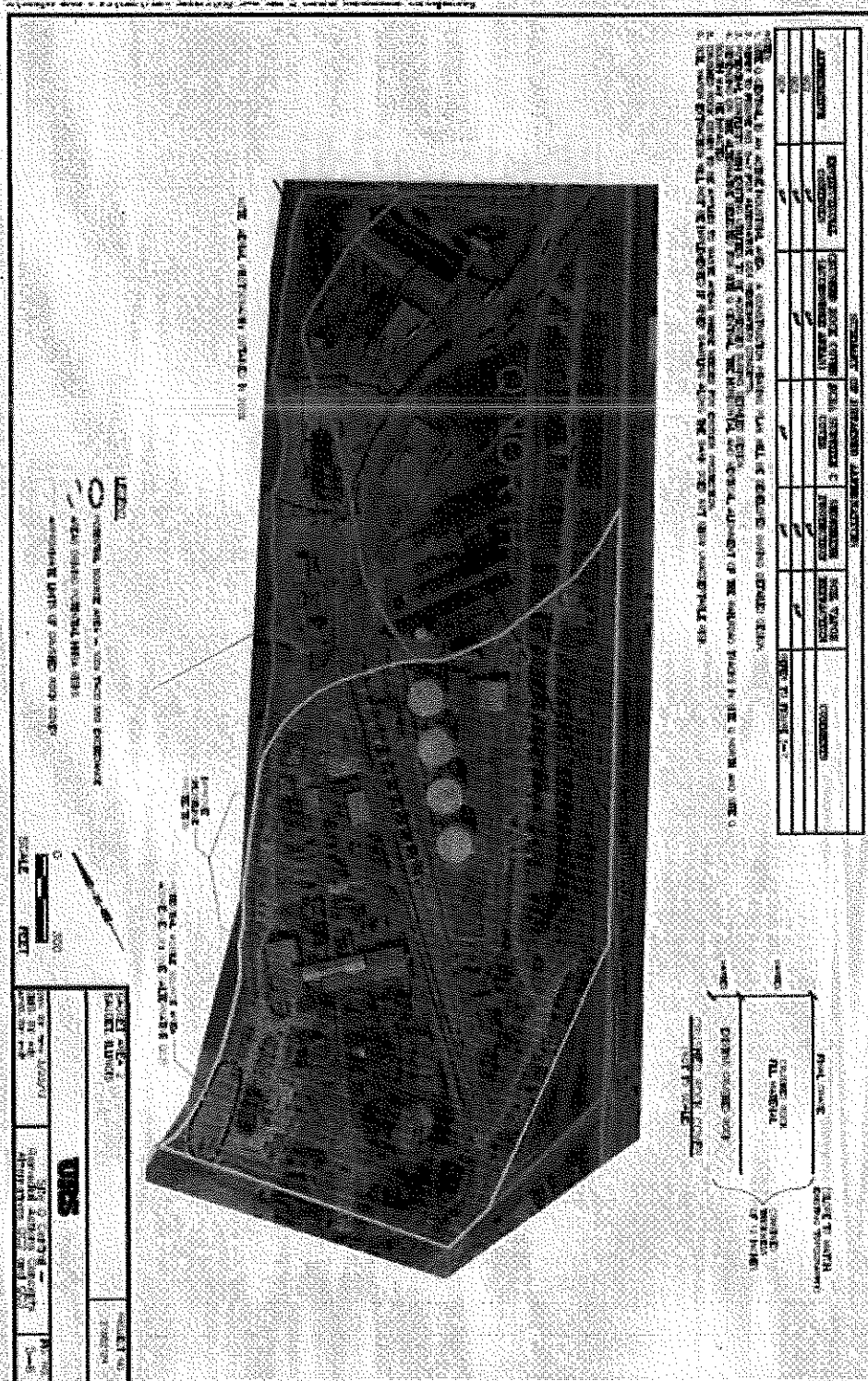


Figure 9: Site Q Central: Alternatives QC2/QC3



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Figure 12: Site Q South: Alternatives QS3/QS4

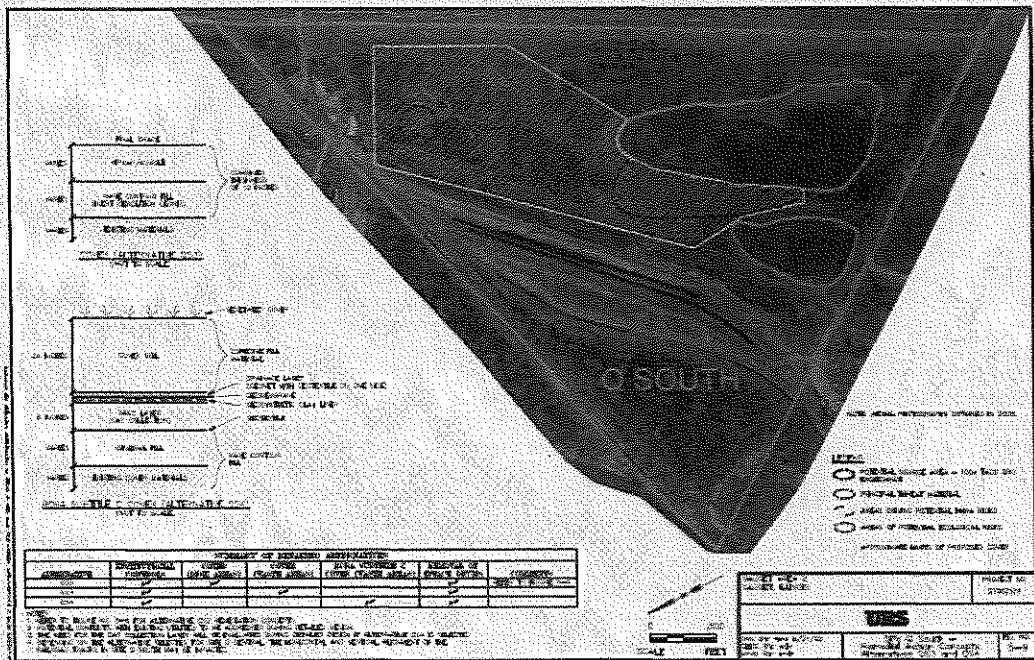


Figure 13: Site R: Alternatives R2/R3

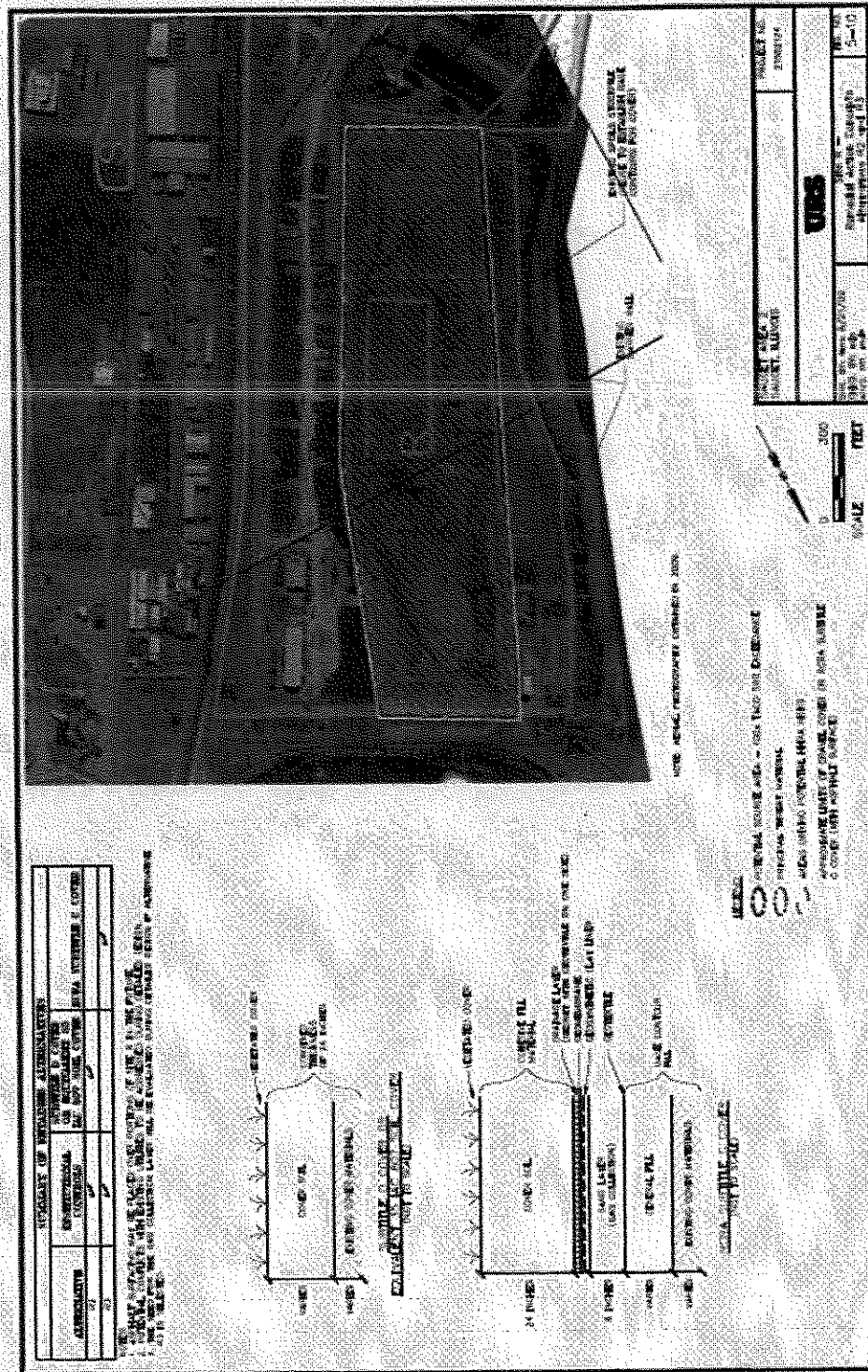
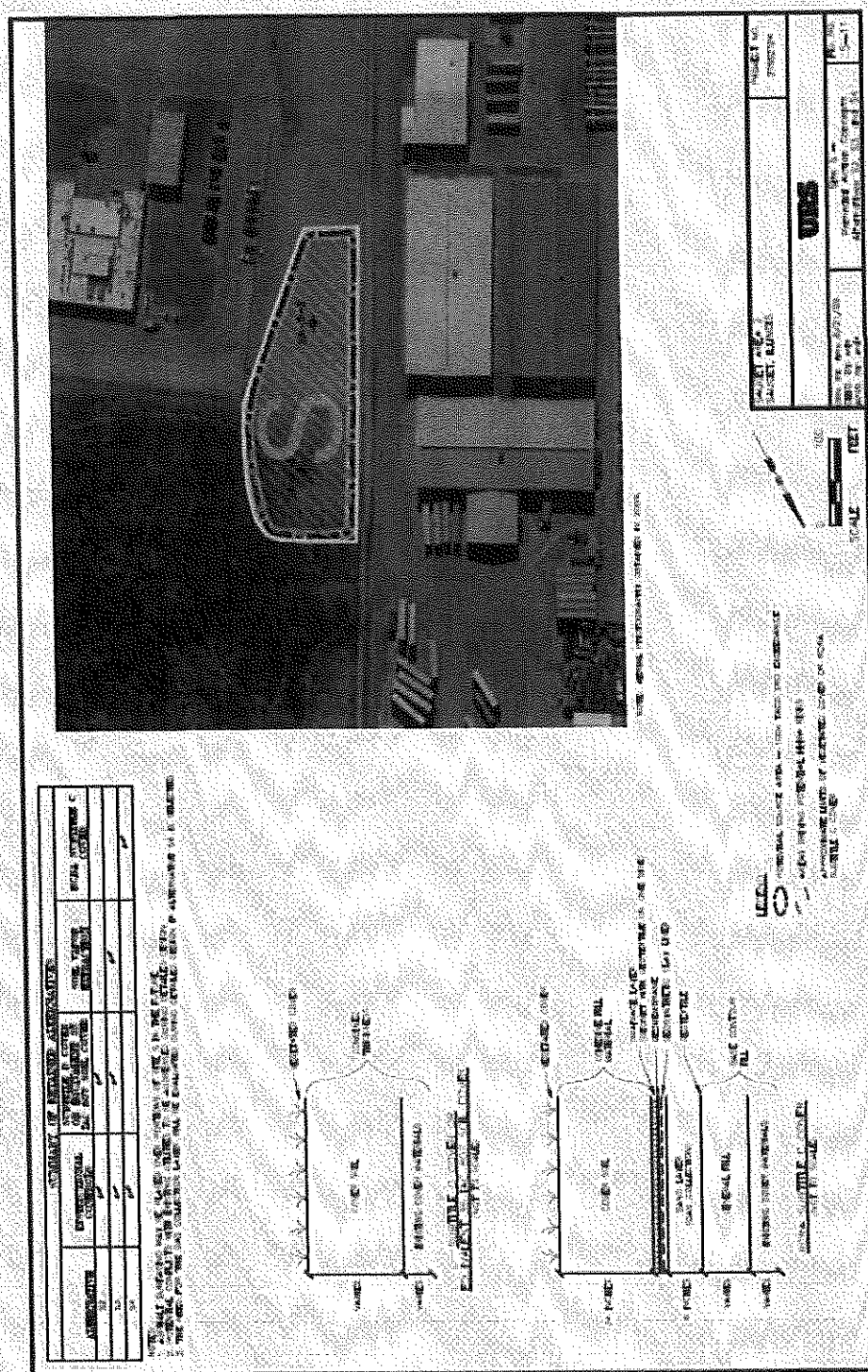


Figure 14: Site 2: Alternatives S2, S3, S4



APPENDIX A
ADMINISTRATIVE RECORD INDEX

U.S. Environmental Protection Agency
Remedial Action

Administrative Record
For

Sauget Area 2 Site Wide
Sauget and Cahokia, St. Clair County, Illinois

UPDATE 1
June 5, 2013
SEMS ID: 902713

<u>NO.</u>	<u>SEMS ID</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	141603	9/23/94	U.S. EPA	File	Administrative Record Site Index for Sauget Area 2 Site Q - Removal Action - Original <i>(The documents listed in this index are incorporated by reference into this Administrative Record)</i>	1
2	141574	11/19/98	U.S. EPA	File	Administrative Record Site Index for Sauget Area 2 Site Q - Second Removal Action - Original <i>(The documents listed in this index are incorporated by reference into this Administrative Record)</i>	1
3	350031	7/1/08	AMEC Earth and Environmental	Sauget Area 2 Sites Committee	Revised Baseline Ecological Assessment for Sauget Area 2 Sites	1497
4	317203	8/1/08	URS Corporation	Sauget Area 2 Site Group	Principal Threat Wastes Technical Memorandum	284
5	359815	9/4/08	URS Corporation	U.S. EPA	Vapor Intrusaion Data Validation Report for Sauget Area 2	107
6	419725	1/1/09	URS Corporation	Sauget Area 2 Site Group	Remedial Investigation Report for Sauget Area 2	15099
7	902712	10/1/09	AECOM	Sauget Area 2 Sites Group	Human Health Risk Assessment for Sauget Area 2	2240

<u>NO.</u>	<u>SEMS ID</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
8	364621	5/1/10	U.S. EPA	File	Community Involvement Plan for Sauget Area 1 and Area 2 Superfund Sites	22
9	902697	5/1/13	Uphoff, G., and S. Smith, Environmental Management Services	Linebaugh, S., U.S. EPA	Final Feasibility Study Report for the Sauget Area 2 Sites Group	1177
10	902711	6/1/13	U.S. EPA	Public	Fact Sheet: EPA Proposes Cleanup Plan for Soil and Ground Water	7
11	902710	6/2/13	U.S. EPA	Public	Proposed Plan for Sauget Area 2, Operable Unit 1	56

APPENDIX B

LIST OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARs)

Location Specific ARARs
Sauget Area 2 Sites
Sauget, IL

Location Specific ARARs			
Medium	ARAR	Description	Rationale
Fill Areas	40 CFR 6	Requires Federal agencies to evaluate the potential effects of actions to avoid adversely impacting floodplains, archeological sites, endangered species and wetland.	
	40 CFR 264.18	Establishes location standards for facilities where hazardous waste is disposed.	ARAR if a new landfill is located in the 100-year flood plain
	17 IAC 3706	Prohibits construction in floodways that will result in an increase of the water surface profile that exceeds .1 foot.	Potentially applicable to remedies at Sites Q and R, depending on the remedy chosen.
	33 CFR.323	Governs the discharge of fill material into wetlands.	Potentially applicable if wetlands are located in the area.
	17 IAC 3704	Regulates activities in and adjacent to state public waters.	Potentially applicable depending on remedy selections for Sites Q and R.
	40 CFR 6.302 40 CFR 6.Appendix A Executive Order 11988 (USEPA NEPA regulations; Federal Agencies Executive Order on Floodplains)	Activities that are taken within a floodplain shall avoid, to the extent possible, the long- and short-term adverse effects associated with occupancy and modification of floodplains. Measures shall be taken to mitigate adverse effects of actions in a floodplain, including measures to reduce the risk of flood loss; minimize the impact of floods on human safety and health, and restore/preserve the beneficial values of the floodplain. Structures constructed in a floodplain shall meet the standards and criteria set forth in the regulations promulgated by the Federal Insurance Administration pursuant to the National Flood Insurance Act of 1968.	Applicable to remedies at Sites Q and R, depending on the remedy chosen.
	35 IAC 724.118 b) (Illinois RCRA Hazardous Waste Permit Program regulations similar to 40.CFR 270.14(b)(11)(iv))	Any RCRA Subtitle C TSDF located within a 100-year floodplain must be designed, constructed, and maintained to prevent washout.	Relevant and Appropriate

**Location Specific ARARs
Sauget Area 2 Sites
Sauget, IL**

Location Specific ARARs			
Medium	ARAR	Description	Rationale
Fill Areas (con't)	35 IAC 703.184 d) (Illinois RCRA Hazardous Waste regulations (Subpart B General Facility Standards – Location Standards similar to 40 CFR 264.18(b))	Engineering analysis required to indicate the various hydrodynamic and hydrostatic forces expected to result at the site as a consequence of a 100-year flood; Structural or other engineering studies showing the design of operational units and flood protection devices (e.g., floodwalls, dikes) at the facility and how these will prevent washout.	Relevant and Appropriate
	17 IAC Part 3700 (Illinois Department of Natural Resources (IDNR)-Construction in Floodways of Rivers, Lakes and Streams)	Applies to all rivers, lakes and streams under the department's jurisdiction. Construction in the floodway of any stream serving a tributary area of 6,400 acres or more is subject to this part. Construction activities in the floodway must be permitted (3700.40). However for construction other than levees, the worst-case analysis does not involve flood events in excess of the 100-year frequency flood. Floodplain construction that occurred before July 1, 1985 is considered grandfathered in. Many activities permitted under this part require review by the U.S. Army Corps of Engineers and the IEPA.	Applicable
	17 IAC 3704 Regulation of Public Water (IDNR regulations for construction in rivers)	Applies to construction activities to be undertaken within the river below normal water stage elevation.	Relevant and Appropriate to the remedy at Site Q Central

**Action Specific ARARs
Sauget Area 2 Sites
Sauget, IL**

Action Specific ARARs			
Medium	ARAR	Description	Rationale
Fill Areas	40 CFR 300	National Contingency Plan outlines procedures for remedial actions and for planning and implementing off-site removal actions.	Applicable
	40 CFR 258	Establishes minimum national criteria for management of non-hazardous wastes.	Applicable if waste is taken off site, potentially relevant and appropriate depending on site specific issues.
	40 CFR 261	Identifies solid wastes that are subject to regulation as hazardous wastes	Potentially applicable if hazardous waste is taken off site.
	40 CFR 262	Establishes requirements for generators of hazardous wastes	Potentially applicable if hazardous waste is taken off site.
	40 CFR 263	Establishes standards that apply to persons transporting manifested hazardous wastes within the US	Potentially applicable if hazardous waste is taken off site.
	40 CFR 264	Defines minimum standards for management of hazardous waste.	Potentially relevant and appropriate if a particular requirement has technical merit for the site involved.
	40 CFR 265	Defines requirements for construction maintenance closure and post-closure for hazardous waste landfills.	Potentially relevant and appropriate if a particular requirement has technical merit for the site involved.
	40 CFR 268	Identifies hazardous wastes that are restricted from land disposal	Potentially applicable if hazardous waste is taken off site.
	40 CFR 761	Requirements for management of PCB wastes and PCB-contaminated media.	Potentially applicable if waste is taken off site. Potentially relevant and appropriate if some types of waste are left on site.
	29 CFR 1910.120	Standards for conducting work at hazardous waste sites.	Applicable
Fill Areas (cont)	40 CFR 125	Establishes technology-based limits for direct discharge of treatment system effluent	Potentially applicable if the remedy includes direct discharges.
	40 CFR 402	Controls direct discharge of pollutants to surface waters through the National Pollutant Discharge Elimination System (NPDES) program	Potentially applicable if the remedy includes direct discharges.

**Action Specific ARARs
Sauget Area 2 Sites
Sauget, IL**

Action-Specific ARARs			
Medium	ARAR	Description	Rationale
	40 CFR 403.5	Specifically prohibits the direct discharge of pollutants to a publicly-owned treatment works without treatment, that interfere with operations, or that contaminate sludge	Applicable if the remedy includes direct discharges.
	29 CFR 1910.120	Standards for conducting work at hazardous waste sites	Applicable
	29 CFR 1926	OSHA safety and health standards	Applicable
	35 IAC 307.1101	Sewer discharge criteria that prohibit entry of certain types of pollutants into a POTW	Applicable if the remedy includes direct discharges.
	35 IAC 212, Subpart K (Illinois Air Pollution regulations)	Measures need to be implemented to control fugitive dust emissions so that there will be no visible emissions at the property line and fugitive dust emissions do not exceed 20% opacity. Control measures typically include the application of water or other dust suppressants during clearing, grubbing, and grading.	Applicable
	35 IAC 309.202 (Illinois Construction Permits)	Required State construction permit for any new water treatment works, sewer or wastewater sources or any modification to existing treatment works, sewer or wastewater sources.	Not Applicable
	16 U.S.C. 1531 et seq., Sect. 7(a)(2) (U.S. Threatened and Endangered Species Act)	Actions that jeopardize the existence of a listed species, or result in the destruction or adverse modification of critical habitat, must be avoided or reasonable and prudent mitigation measures taken. The lead agency must determine whether T&E species or their critical habitat are present and conduct informal consultation with the U. S. Fish and Wildlife Service. Determination that T&E species or their critical habitat may be impacted by the proposed action requires preparation of a biological assessment to determine the extent of any possible impacts.	Applicable

**Action Specific ARARs
Sauget Area 2 Sites
Sauget, IL**

Action Specific ARARs			
Medium	ARAR	Description	Rationale
Fill Areas (con't)	520 ILCS 10/3 (Illinois Endangered Species Protection Act)	Prohibits actions that result in takings of state-listed species, such as actions that jeopardize the continued existence of a listed species or result in destruction or adverse modification of its critical habitat.	Applicable
	35 IAC 724.211 a) and b) (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.111)	<u>Closure Performance Standard:</u> The owner or operator must close the facility in a manner that does the following: a) The closure minimizes the need for further maintenance; b) The closure controls, minimizes, or eliminates, to the extent necessary to adequately protect to human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous decomposition products to the ground or surface waters or to the atmosphere	Relevant and Appropriate
	35 IAC 724.212 a) and b) (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.112)	<u>Closure Plan:</u> Requires owners of hazardous waste facilities to submit a written closure plan (the approved plan becomes a condition to any RCRA permit). The closure plan describes the steps necessary for final closure. 724.212(a) (2), 724.212(b) (2) and 724.212(b) (4) are substantive requirements.	Relevant and Appropriate
	35 IAC 724.214 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.114)	<u>Disposal or Decontamination of Equipment, Structures, and Soil:</u> All contaminated equipment, structures, and soils must be properly disposed of or decontaminated.	Relevant and Appropriate

Action Specific ARARs
Sauget Area 2 Sites
Sauget, IL

Action Specific ARARs			
Medium	ARAR	Description	Rationale
Fill Areas (con't)	35 IAC 724.215 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.115)	<u>Certification of Closure:</u> Within 60 days after completion of closure, the owner or operator must submit to the Agency, by registered mail, a certification that the hazardous waste management unit or facility, as applicable, has been closed in accordance with the specifications in the approved closure plan. The certification must be signed by the owner or operator and by an independent registered professional engineer.	Relevant and Appropriate
	35 IAC 724.216 35 IAC 724.409 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care and Subpart N Landfills Surveying and Recordkeeping) similar to 40 CFR 264.116; 40 CFR 264.309)	<u>Survey Plat:</u> No later than the submission of the certification of closure of each hazardous waste disposal unit, the owner or operator must submit to any local zoning authority or authority with jurisdiction over local land use and to the Agency and record with land titles, a survey plat indicating the location and dimensions of landfill cells or other hazardous waste disposal units with respect to permanently surveyed benchmarks. This plat must be prepared and certified by a professional land surveyor. The plat filed with the local zoning authority or the authority with jurisdiction over local land use must contain a note, prominently displayed, that states the owner's and operator's obligation to restrict disturbance of the hazardous waste disposal unit in accordance with Subpart G of this Part.	Relevant and Appropriate
	35 IAC 724.217 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.117)	<u>Post-Closure Care and Use of Property</u> a) Requires a Post-Closure Care Period of at least 30 years after completion of closure for the unit b) must require continuation at partial or final closure of any of the security requirements of Section 724.114 during part or all of the post-closure period when either of the following is true: - hazardous wastes may remain exposed after completion of partial or final closure; or - access by the public or domestic livestock may pose a hazard to human health. d) All the post-closure care activities must be in accordance with the provisions of the approved post-closure plan as specified in Section 724.218.	Relevant and Appropriate

**Action Specific ARARs
Sauget Area 2 Sites
Sauget, IL**

Action-Specific ARARs			
Medium	ARAR	Description	Rationale
Fill Areas (con't)	35 IAC 724.217 c)- (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.117)	<u>Post-Closure Care and Use of Property</u> c) - Post-closure use of property on or in which hazardous wastes remain after closure must never be allowed to disturb the integrity of the final cover unless the Agency determines it is necessary for reasons listed in the regulations	Relevant and Appropriate
	35 IAC 724.218 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.118)	<u>Post-Closure Plan</u> The owner must have a written postclosure plan which must identify the activities that will be carried on after closure and the frequency of these activities (including planned monitoring activities and frequencies, planned maintenance activities, and name, address, and phone number of the person or office to contact). The relevant and appropriate requirements in 724.218 are: 724.218(b)(1) and (b)(2) – the post-closure plans must incorporate monitoring and maintenance activities that comply with the substantive requirements of 724 Subparts F and N.	Relevant and Appropriate
	35 IAC 724.219 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.119)	<u>Post-Closure Notices:</u> Requires within 60 days after certification of closure the owner or operator of a disposal facility to submit to the Agency, to the County Recorder and to any local zoning authority or authority, a record of the type, location, and quantity of hazardous wastes disposed (for hazardous wastes disposed of before January 12, 1981, the owner or operator must identify these items to the best of the owner or operator's knowledge and in accordance with any records). In addition, the owner or operator is required to record a notation on the deed to the facility property (or on some other instrument that is normally examined during title search) that will in perpetuity notify any potential purchaser of the property that the land has been used to manage hazardous wastes; its use is restricted; and the survey plat and record of the type, location, and quantity of hazardous wastes disposed been filed with the Agency, the County Recorder and any local zoning authority or authority with jurisdiction over local land use.	Relevant and Appropriate

**Action Specific ARARs
Sauget Area 2 Sites
Sauget, IL**

Action Specific ARARs			
Medium	ARAR	Description	Rationale
Fill Areas (con't)	35 IAC 724.220 (Illinois RCRA Hazardous Waste regulations (Subpart G Closure and Postclosure Care) similar to 40 CFR 264.120)	Certification of Completion of Post-closure Care: Within 60 days after completion of the established post-closure care period for each hazardous waste disposal unit, the owner or operator must submit to the Agency, by registered mail, a certification that the post-closure care period for the hazardous waste disposal unit was performed in accordance with the specifications in the approved post- closure plan.	Relevant and Appropriate
	35 IAC 724.242 – 724.251 (Illinois Hazardous Waste Regulations (Subpart H - Financial Requirements for Closure and Post- Closure Care))	These sections require an owner/operator of a regulated unit to provide cost estimates and financial assurance for both closure and post- closure care.	Not Applicable
	35 IAC 724.410 a)1 – 4 (Illinois RCRA Hazardous Waste regulations (Subpart N Landfills Closure and Postclosure Care) similar to 40 CFR 264.310(a))	At final closure of the landfill or upon closure of any cell, the owner or operator must cover the landfill or cell with a final cover designed and constructed to do the following: 1) Provide long-term minimization of migration of liquids through the closed landfill; 2) Function with minimum maintenance; 3) Promote drainage and minimize erosion or abrasion of the cover; 4) Accommodate settling and subsidence so that the cover's integrity is maintained	Item 1 Relevant But Not Appropriate to Site Conditions Items 2-4 Relevant and Appropriate

**Action Specific ARARs
Sauget Area 2 Sites
Sauget, IL**

Action Specific ARARs			
Medium	ARAR	Description	Rationale
Fill Areas (con't)	35 IAC 724.410 b) 1,4,5, and 6 (Illinois RCRA Hazardous Waste regulations (Subpart N Landfills Closure and Postclosure Care) similar to 40 CFR 264.310(b))	After final closure, the owner or operator must comply with all post-closure requirements contained in Sections 724.217 through 724.220, including maintenance and monitoring throughout the post-closure care period (specified in the permit under Section 724.217). After final closure the owner or operator must do the following: 1) Maintain the integrity and effectiveness of the final cover, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion, or other events; 4) Maintain and monitor the groundwater monitoring system and comply with all other applicable requirements of Subpart F of this Part; 5) Prevent run-on and run-off from eroding or otherwise damaging the final cover; and 6) Protect and maintain surveyed benchmarks	Relevant and Appropriate
	35 IAC 722.111 (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 262.11)	Characterization of generated waste to determine if it is a hazardous waste. Any person who generates a solid waste must determine if that waste is hazardous by evaluation of whether the waste is excluded from hazardous waste regulation; listed under 35 IAC 721, Subpart D; or exhibits one of the hazardous waste characteristics under 35 IAC 721, Subpart C.	Applicable
	40 CFR 761.61 (USEPA TSCA regulations)	Characterization of soils, liquids and decontamination fluids to determine whether they are PCB-remediation waste (as found concentrations of PCBs are 50 ppm or greater).	Applicable
	35 IAC 722.134 (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 262.34)	Allows for storage of hazardous waste in containers for 90 days or less while alleviating the need to meet all the requirements for a container storage area.	Applicable

**Action Specific ARARs
Sauget Area 2 Sites
Sauget, IL**

Action-Specific ARARs			
Medium	ARAR	Description	Rationale
Fill Areas (con't)	35 IAC 724.275 (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 264.175)	Design standards for hazardous waste container storage area.	Relevant and Appropriate to remedies at Sites Q Central and S, depending on the remedy chosen.
	35 IAC 724.271 – 279 (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 264.171 – 179)	Requirements for condition, handling, containment, compatibility, and marking containers used to store or treat hazardous waste or environmental media containing a hazardous waste.	Relevant and Appropriate
	35 IAC 724.297 (Illinois Hazardous Waste regulations for tank systems)	Applies to owners and operators of facilities that use tank systems for storing or treating hazardous waste.	Not Applicable or Relevant to Site Conditions
	35 IAC 724.328 (Illinois Hazardous Waste regulations for surface impoundments)	Applies to owners and operators that use surface impoundments to treat, store, or dispose of hazardous waste.	Not Applicable or Relevant to Site Conditions
	35 IAC 724.653 a) b) d) and e) (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 264.553)	Requirements associated with establishing temporary storage of hazardous waste (hazardous soils, water, and decontamination fluids) in tanks or containers during remediation.	Relevant and Appropriate
	35 IAC 724.101 g) (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 264.1(g))	Exemption from RCRA tank standards for tanks that are part of a wastewater treatment unit (tanks used to temporarily store hazardous wastewaters sent to a wastewater treatment facility for treatment on- or off-site).	Applicable
	40 CFR 761.65 (USEPA TSCA regulations)	Storage area design and operation requirements for storage of TSCA-regulated PCB-containing wastes for disposal in containers.	Relevant and Appropriate
	35 IAC 101-104 (Illinois Construction and Demolition Landfill Citing Restrictions)	Requirements for landfilling C&D.	Not Applicable or Relevant to Site Conditions

**Action Specific ARARs
Sauget Area 2 Sites
Sauget, IL**

Action Specific ARARs			
Medium	ARAR	Description	Rationale
Fill Areas (con't)	35 IAC 1100 (Illinois Clean Construction or Demolition Debris Fill Operations)	Applies to all clean construction or demolition debris (CCDD) fill operations that are required to be permitted in a current or former quarry, mine or other excavation.	Relevant and Appropriate (Site Q South only)
	35 IAC 306.302 (Illinois Performance Criteria – Expansion of Combined Sewer Service)	The expansion of existing or establishment of new combined sewer service area is prohibited, except when approved by Agency in accordance with the provisions in this section.	Not Applicable or Relevant to Site Conditions
	35 IAC 807 Subpart C (Illinois Sanitary Landfills)	Final cover (807.305(a)); Prohibitions against open burning (807.311), air pollution (807.312), water pollution (807.313) and waters of the state (807.315); and, requirements for implementation of closure requirements (807.318).	Applicable (Site P)
	35 IAC 807 Subpart E (Illinois Closure and Post-Closure Care)	All sections	Applicable (Site P)
	35 IAC 807 Subpart F (Financial Assurance for Closure and Post-closure care)	All sections	Not Applicable. Relevant But Not Appropriate to Site Conditions
	35 IAC 811.107 (New Solid Waste Landfills -Operating Standards)	New landfills must not accept solid waste from vehicles that do not utilize devices such as cover or tarpaulins to control litter. Trucks exiting or entering the site(s) with solid waste must be tarped.	Not Applicable. Relevant But Not Appropriate to Site Conditions
	35 IAC 811.111 (New Solid Waste Landfills Post-closure Maintenance)	This section describes post-closure maintenance activities including the specification of inspection frequencies; filling of rills, gullies or crevices; repair of eroded and scoured drainage channels; filling of holes and depressions; revegetation of reworked surfaces or eroded vegetation of 100 sq ft; and, identification of planned uses of the property.	Not Applicable. Relevant But Not Appropriate to Site Conditions
	35 IAC 811.314 (New Solid Waste Landfill - Final Cover System)	This section provides standards for low permeability and final protective layers of a new solid waste landfill.	Not Applicable. Relevant But Not Appropriate to Site Conditions

**Action Specific ARARs
Sauget Area 2 Sites
Sauget, IL**

Action Specific ARARs			
Medium	ARAR	Description	Rationale
Fill Areas (con't)	35 IAC 811.319 (New Solid Waste Landfill - Groundwater Monitoring Program)	Requires groundwater monitoring to continue for 15 years after closure, or in the case of MSWLF units, a minimum of 30 years after closure. Quarterly monitoring is required for 5 years and semi-annual after that.	Not Applicable. Relevant But Not Appropriate to Site Conditions
	765 ILCS 122/1 et seq. Illinois' Uniform Environmental Covenants Act.	An owner or owners of real property may voluntarily enter into an environmental covenant, as a grantor of an interest in the real property, with an agency and, if appropriate, one or more holders. No owner, agency, or other person shall be required to enter into an environmental covenant as part of an environmental response project; provided, however, that (i) failure to enter into an environmental covenant may result in disapproval of the environmental response project; and (ii) once the owner, agency, or other person assumes obligations in an environmental covenant they must comply with those obligations of the environmental covenant in accordance with this Act.	To Be Considered
	35 IAC 301.108 (Illinois Water Quality and Pollution Control regulations general provisions)	The Illinois Pollution Control Board may grant an adjusted standard to an applicable regulatory standard for persons who can justify such an adjustment consistent with subsection (a) of section 27 of the Illinois Environmental Protection Act.	Applicable

**Action Specific ARARs
Sauget Area 2 Sites
Sauget, IL**

Action Specific ARARs			
Medium	ARAR	Description	Rationale
Groundwater	35 IAC 724.197 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.97)	<p>724.197(a) - The groundwater monitoring system must consist of a sufficient number of wells, installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that fulfill the following requirements: 1) They represent the quality of background water, 2) They represent the quality of groundwater passing the point of compliance; and, 3) They allow for the detection of hazardous waste or hazardous constituents that have migrated to the uppermost aquifer.</p> <p>724.197(c) - All monitoring wells must be cased in accordance with this section.</p> <p>724.197(d) - The groundwater monitoring program must include consistent sampling and analysis to ensure a reliable indication of groundwater quality below the waste management area. The program must include procedures and techniques for the following: 1) Sample collection; 2) Sample preservation and shipment; 3) Analytical procedures; and 4) Chain of custody control.</p> <p>724.197(e) - The groundwater monitoring program must include sampling and analytical methods that are appropriate for groundwater sampling and that accurately measure hazardous constituents in groundwater samples.</p> <p>724.197(f) - The groundwater monitoring program must include a determination of the groundwater surface elevation each time groundwater is sampled.</p> <p>724.197 (h) and (i) - Specifies the statistical methods that may be used in evaluating groundwater monitoring data and performance standards for each statistical method</p>	Relevant and Appropriate

**Action Specific ARARs
Sauget Area 2 Sites
Sauget, IL**

Action Specific ARARs			
Medium	ARAR	Description	Rationale
Groundwater (con't)	35 IAC 724.196 a) (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.96 (a))	<u>Compliance Period:</u> The Agency must specify in the facility permit the compliance period during which the groundwater protection standard of Section 724.192 applies. The compliance period is the number of years equal to the active life of the waste management area (including any waste management activity prior to permitting, and the closure period.)	Relevant and Appropriate
	35 IAC 724.199 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.99)	<u>Compliance Monitoring Program:</u> An owner or operator is required to establish a compliance monitoring program to meet the requirements of this section.	Relevant and Appropriate
	35 IAC 724.200 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.100)	<u>Corrective Action:</u> An owner or operator is required to establish a corrective action program in accordance with this section.	Relevant and Appropriate
	35 IAC 309.102 (Illinois NPDES Storm Water regulations Analogous to 40 CFR 122.26)	Storm water discharge requirements are applicable to activities at the SA2 Sites involving disturbance of cover in an area of 1 acre or more total. The types of controls typical to SWPPP include, but are not limited to: storm water run-off conveyances, diversion dikes, sediment fences, sediment traps, limitations on the size of disturbed areas, and sequencing of construction to minimize and control disturbances.	Applicable

**Action Specific ARARs
Sauget Area 2 Sites
Sauget, IL**

Action Specific ARARs			
Medium	ARAR	Description	Rationale
Surface Water	10 CFR 230.10(a), (b), (c) and (d) 40 CFR 230 Subpart H (USEPA Clean Water Act regulations)	The discharge of dredged or fill material into Waters of the United States, including jurisdictional (adjacent) wetlands, is prohibited if there is a practical alternative that would have less adverse impact. No discharge shall be permitted that results in violation of state water quality standards, violates any toxic effluent standard, and/or jeopardizes an endangered species or its critical habitat. No discharge will be permitted that will cause significant degradation of Waters of the United States. No discharge is permitted unless mitigation measures have been taken in accordance with 40 CFR 230, Subpart H. Compensatory mitigation for loss of wetlands shall be provided for wetlands > 0.25 acre. Compensatory mitigation shall be at a ratio of 2:1 for restoration, 4:1 for creation and enhancement, and 10:1 for preservation.	Applicable
	40 CFR 230.10 (a)-(d) 40 CFR 230 33 CFR 320 (USEPA Clean Water Act regulations)-	The discharge of dredged or fill material into Waters of the United States is prohibited if there is a practical alternative that would have less adverse impact. No discharge shall be permitted that results in violation of state water quality standards, violates any toxic effluent standard, or jeopardizes an endangered species. No discharge is permitted that will cause significant degradation of Waters of the United States. Mitigative measures must be implemented in accordance with 40 CFR 230, Subpart H.	Applicable
	16 U.S.C. 661 et seq., (Sections 661-663 and 668) (U.S. Fish and Wildlife Coordination Act)	Activities that modify water bodies must consult and coordinate with the U.S. Department of the Interior to ensure that the activity conserves wildlife resources and prevents the loss and damage to such resources.	Relevant and Appropriate
Surface Water (con't)	35 IAC 309.102 (Illinois NPDES Storm Water regulations Analogous to 40 CFR 122.26)	Storm water discharge requirements are applicable to activities at the SA2 Sites involving disturbance of cover in an area of 1 acre or more total. The types of controls typical to SWPPP include, but are not limited to: storm water run-off conveyances, diversion dikes, sediment fences, sediment traps, limitations on the size of disturbed areas, and sequencing of construction to minimize and control disturbances.	Applicable

**Action Specific ARARs
Sauget Area 2 Sites
Sauget, IL**

Chemical Specific ARARs
Sauget Area 2 Sites
Sauget, IL

Chemical Specific ARARs			
Medium	ARAR	Description	Rationale
Fill Areas	40 CFR 63	Contains national emission standards for hazardous air pollutants (NESHAP)	Relevant and appropriate to remedial actions that include emissions to the atmosphere.
	40 CFR 261, 263 and 268	Classification, transport, and disposal of hazardous waste.	Applicable if hazardous waste is sent off site. Potentially relevant and appropriate for actions on site.
	40 CFR 761	Defines requirements for management of PCB waste and PCB-contaminated materials under TSCA, including requirements for a chemical waste landfill.	Potentially relevant and appropriate if waste is left in place, applicable if PCB waste is sent off site.
	35 IAC 742	Provides for a tiered approach to developing remediation objectives, and describes how certain actions meet remediation objectives.	To be Considered
	40 CFR 141	MCLs for specifically identified constituents in drinking water	Potential relevant and appropriate although local ordinances prevent use of groundwater for potable purposes.
	40 CFR 264.92	Establishes groundwater protection standards for hazardous waste treatment and disposal facilities	Potential ARAR depending on activity at any one site.
	35 IAC 724.192 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.92)	<u>Groundwater Protection Standard:</u> The owner or operator must ensure that hazardous constituents under Section 724.193 detected in the groundwater from a regulated unit do not exceed the concentration limits under Section 724.194 in the uppermost aquifer underlying the waste management area beyond the point of compliance under Section 724.195 during the compliance period under Section 724.196.	Relevant and Appropriate

Chemical Specific ARARs
Sauget Area 2 Sites
Sauget, IL

Chemical Specific ARARs			
Medium	ARAR	Description	Rationale
Fill Areas (con't)	35 IAC 724.193 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.93))	<u>Hazardous Constituents:</u> The Agency must specify in the facility permit the hazardous constituents to which the groundwater protection standard of Section 724.192 applies. Hazardous constituents are constituents identified in Appendix H of 35 Ill. Adm. Code 721 that have been detected in groundwater in the uppermost aquifer underlying a regulated unit and that are reasonably expected to be in or derived from waste contained in a regulated unit, unless the Agency has excluded them under subsection (b) of this Section.	Relevant and Appropriate
	35 IAC 724.194 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.94))	<u>Concentration Limits:</u> The Agency must specify in the facility permit concentration limits in the groundwater for hazardous constituents established under Section 724.193. The following must be true of the concentration of a hazardous constituent: 1) It must not exceed the background level of that constituent in the groundwater at the time that limit is specified in the permit; or, 2) For any of the constituents listed in Table 1, it must not exceed the respective value given in that Table if the background level of the constituent is below the value given in Table 1; or, 3) It must not exceed an alternative limit established by the Agency under subsection (b) of this Section.	Relevant and Appropriate
	35 IAC 724.195 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.95))	<u>Point of Compliance:</u> The Agency must specify in the facility permit the point of compliance at which the groundwater protection standard of Section 724.192 applies and at which monitoring must be conducted. The point of compliance is a vertical surface located at the hydraulically downgradient limit of the waste management area that extends down into the uppermost aquifer underlying the regulated units.	Relevant and Appropriate
	35 IAC 728.109 a) (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 268.7)	Requires a generator to determine whether generated hazardous waste is prohibited from land disposal, including waste codes, treatment standards and underlying hazardous constituents.	Applicable

Chemical Specific ARARs
Sauget Area 2 Sites
Sauget, IL

Chemical Specific ARARs			
Medium	ARAR	Description	Rationale
Fill Areas (con't)	35 IAC 728.140 a) (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 268.40(a))	Disposal requirement that all hazardous waste or hazardous waste containing media must meet applicable LDR treatment standards prior to disposal.	Applicable
	35 IAC 722.130 - 134 (Illinois RCRA Hazardous Waste regulations similar to 40 CFR 262)	Pre-transport requirements requires the generator to package the waste, label each package, mark each package, and placard or offer the initial transporter the appropriate placards in accordance with the U. S. Department of Transportation regulations prior to transporting hazardous waste or offering hazardous waste for transportation off-site.	Applicable
	35 IAC 722 and 723 92 IAC 171-178 (Illinois RCRA Hazardous Waste regulations and the Illinois Department of Transportation hazardous material regulations)	For any hazardous waste, all RCRA hazardous waste generator and transporter requirements including administrative requirements (manifests, EPA ID number, etc...) as well as the Illinois Department of Transportation requirement for hazardous materials (which incorporate the US Department of Transportation hazardous material regulations) would apply.	Applicable
	35 IAC 742 (Illinois Tiered Approach to Corrective Action Objectives)	Sets forth procedures for evaluating the risk to human health posed by environmental conditions and developing remediation objectives that achieve acceptable risk levels based upon site-specific conditions.	To Be Considered
	35 IAC 307.1101 (Illinois sewer discharge criteria)	Prohibition against discharge of certain types of pollutants into a Publicly Owned Treatment Works.	Relevant and Appropriate
	35 IAC 809 (Illinois Special Waste Hauling regulations)	For wastes which meet the definition of a Special Waste (35 IAC 808) in Illinois, the special waste regulations, including administrative requirements, relating to manifesting and transport would apply.	Applicable
Groundwater	40 CFR 264.94	Establishes maximum concentration limits. Provides for establishment of alternate limits for groundwater protection	Potential ARAR depending on activity at any one site.
	40 CFR 264.95	Establishes point of compliance for which groundwater quality standards apply	Potential ARAR depending on activity at any one site.

Chemical Specific ARARs
Sauget Area 2 Sites
Sauget, IL

Chemical Specific ARARs			
Medium	ARAR	Description	Rationale
Groundwater (con't)	40 CFR 131	Establishes criteria for water quality for surface water.	May be ARAR if an alternative includes a point discharge, otherwise TBC.
	35 IAC 620.405 (Illinois Groundwater Quality Standards)	Prohibits any person from causing, threatening, or allowing release of contaminants to groundwater resulting in exceedence of groundwater quality standards.	Applicable
	35 IAC 620.410 (Illinois Groundwater Quality Standards)	Class 1 groundwater standards (in general equivalent to a drinking water standard or the MCL).	Applicable
	35 IAC 620.250 (Illinois Groundwater Quality Standards)	A groundwater management zone (GMZ) may be established for a three dimensional region containing groundwater being managed to mitigate impairment caused by the release of contaminants from a site: (1) That is subject to a corrective action process approved by the Agency; or (2) For which the owner or operator undertakes an adequate corrective action in a timely and appropriate manner. The GMZ suspends the groundwater quality standards during the period of remediation until the groundwater quality standards have been attained.	Applicable
	35 IAC 620.260 (Illinois Groundwater Quality Standards)	Any person may petition the Illinois Pollution Control Board to reclassify a groundwater in accordance with the procedures for adjusted standards specified in Section 28.1 of the Act and 35 Ill. Adm. Code 106, Subpart G. In any proceeding to reclassify specific groundwater by adjusted standard, in addition to the requirements of 35 Ill. Adm. Code 106, Subpart G, and Section 28.1(c) of the Act, the petition shall, at a minimum, contain information specified in this section.	Applicable

**Chemical Specific ARARs
Sauget Area 2 Sites
Sauget, IL**

Chemical-Specific ARARs			
Medium	ARAR	Description	Rationale
Groundwater (con't)	35 IAC 724.191 (Illinois RCRA Hazardous Waste regulations (Subpart F General Groundwater Monitoring Requirements similar to 40 CFR 264.91)	<p>Required Programs: Owners and operators subject to Subpart F must conduct a monitoring and response program as follows:</p> <ol style="list-style-type: none"> 1) Whenever hazardous constituents pursuant to Section 724.193 from a regulated unit are detected at a compliance point pursuant to Section 724.195, the owner or operator must institute a compliance monitoring program pursuant to Section 724.199. 2) Whenever the groundwater protection standard pursuant to Section 724.192 is exceeded, the owner or operator must institute a corrective action program pursuant to Section 724.200. 3) Whenever hazardous constituents pursuant to Section 724.193 from a regulated unit exceed concentration limits pursuant to Section 724.194 in groundwater between the compliance point pursuant to Section 724.195 and the downgradient facility property boundary, the owner or operator must institute a corrective action program pursuant to Section 724.200 	Relevant and Appropriate
Surface water	35 IAC 302.210 (Illinois Surface Water Quality Standards)	<p>Waters of the State shall be free from any substances or combination of substances in concentrations toxic or harmful to human health, or to animal, plant or aquatic life.</p> <p>This regulation includes those constituents without a promulgated standard in 35 IAC 302.208. These derived water quality criteria may be found on IEPA's web site (http://www.epa.state.il.us/water/water-quality-standards/water-quality-criteria.html) and will include any additional criteria that IEPA develops to address specific chemicals associated with the SA2 Sites for which derived criteria have not been calculated already.</p>	Applicable
Surface water (con't)	35 IAC 302.208 (Illinois Surface Water Quality Standards)	<p>Numeric Surface Water Quality Standards are established for the protection of human health and aquatic life. The Mississippi River is not provided any specific surface water designation; therefore, the general use water quality standards would be applied. The general use water quality standards provide criteria for the protection of aquatic life (acute and chronic) and human health.</p>	Applicable

Chemical Specific ARARs
Sauget Area 2 Sites
Sauget, IL

APPENDIX C

FEASIBILITY STUDY COST ESTIMATE FOR ALTERNATIVES O2, P3, QN2, QC3, QS3, R2, S3

Table 5-1
Site O and O North - Cost Estimate Summary Alternative O2:
35 IAC 724 Compliant Soil Cover
Over Identified Waste Areas, and Institutional Controls

Non-Responsive

Table 5-1 (cont)
Site O and O North - Cost Estimate Summary Alternative O2:
35 IAC 724 Compliant Soil Cover
Over Identified Waste Areas, and Institutional Controls

Non-Responsive

Table 5-1 (cont)

Site O and O North - Cost Estimate Summary Alternative O2:

35 IAC 724 Compliant Soil Cover

Over Identified Waste Areas, and Institutional Controls

Non-Responsive



Table 5-5

Site P - Cost Estimate Summary Alternative P3:

Asphalt Cover Mobile Source Area (SA-P-3/AT-P-5)

**35 IAC 807 Solid Waste Landfill Cover Over Remainder of Identified Waste Areas,
NAPL Collection Well (LEACH P-1), Vapor Intrusion Mitigation, and Institutional Controls**

Non-Responsive

Table 5-5 (cont)

Site P - Cost Estimate Summary Alternative P3:
Asphalt Cover Mobile Source Area (SA-P-3/AT-P-5)

35 IAC 807 Solid Waste Landfill Cover Over Remainder of Identified Waste Areas,
NAPL Collection Well (LEACH P-1), Vapor Intrusion Mitigation, and Institutional Controls

Non-Responsive

Table 5-5 (cont)

Site P - Cost Estimate Summary Alternative P3:

Asphalt Cover Mobile Source Area (SA-P-3/AT-P-5)

**35 IAC 807 Solid Waste Landfill Cover Over Remainder of Identified Waste Areas,
NAPL Collection Well (LEACH P-1), Vapor Intrusion Mitigation, and Institutional Controls**

Non-Responsive

Table 5-5 (cont)

Site P - Cost Estimate Summary Alternative P3:

Asphalt Cover Mobile Source Area (SA-P-3/AT-P-5)

35 IAC 807 Solid Waste Landfill Cover Over Remainder of Identified Waste Areas,
NAPL Collection Well (LEACH P-1), Vapor Intrusion Mitigation, and Institutional Controls

Non-Responsive

Table 5-7

**Site Q North - Cost Estimate Summary Alternative QN2:
35 IAC 724 Compliant Crushed Rock Cover Over Dogleg Area,
Vapor Intrusion Mitigation, and Institutional Controls**

Non-Responsive



Table 5-7 (cont)
Site Q North - Cost Estimate Summary Alternative QN2:
35 IAC 724 Compliant Crushed Rock Cover Over Dogleg Area,
Vapor Intrusion Mitigation, and Institutional Controls

Non-Responsive



Table 5-7 (cont)

**Site Q North - Cost Estimate Summary Alternative QN2:
35 IAC 724 Compliant Crushed Rock Cover Over Dogleg Area,
Vapor Intrusion Mitigation, and Institutional Controls**

Non-Responsive



Table 5-12

Site Q Central - Cost Estimate Summary Alternative QC3:
35 IAC Compliant Crushed Rock Cover Over Identified Waste Areas,
SVE at Mobile Source Area (AT-Q32), Shoreline Erosion Protection,
and Institutional Controls

Non-Responsive

Table 5-12 (cont)

**Site Q Central - Cost Estimate Summary Alternative QC3:
35 IAC Compliant Crushed Rock Cover Over Identified Waste Areas,
SVE at Mobile Source Area (AT-Q32), Shoreline Erosion Protection,
and Institutional Controls**

Non-Responsive

Table 5-12 (cont)

Site Q Central - Cost Estimate Summary Alternative QC3:
35 IAC Compliant Crushed Rock Cover Over Identified Waste Areas,
SVE at Mobile Source Area (AT-Q32), Shoreline Erosion Protection,
and Institutional Controls

Non-Responsive

Table 5-12 (cont)

**Site Q Central - Cost Estimate Summary Alternative QC3:
.35 IAC Compliant Crushed Rock Cover Over Identified Waste Areas,
SVE at Mobile Source Area (AT-Q32), Shoreline Erosion Protection,
and Institutional Controls**

Non-Responsive

Table 5-15

Site Q South - Cost Estimate Summary Alternative QS3:
35 IAC Compliant Crushed Rock Cover Over Identified Waste Areas,
Removal of Intact Drums at AT-Q35, and Institutional Controls

Non-Responsive

Table 5-15 (cont)

Site Q South - Cost Estimate Summary Alternative QS3:
35 IAC Compliant Crushed Rock Cover Over Identified Waste Areas,
Removal of Intact Drums at AT-Q35, and Institutional Controls

Non-Responsive

Table 5-15 (cont)

Site Q South - Cost Estimate Summary Alternative QS3:
35 IAC Compliant Crushed Rock Cover Over Identified Waste Areas,
Removal of Intact Drums at AT-Q35, and Institutional Controls

Non-Responsive



Table 5-17

Site R - Cost Estimate Summary Alternative R2:
35 IAC 724 Compliant Soil Cover
Over Entire Site, and Institutional Controls

Non-Responsive

Table 5-17 (cont)
Site R - Cost Estimate Summary Alternative R2:
35 IAC 724 Compliant Soil Cover
Over Entire Site, and Institutional Controls

Non-Responsive

Table 5-17 (cont)
Site R - Cost Estimate Summary Alternative R2:
35 IAC 724 Compliant Soil Cover
Over Entire Site, and Institutional Controls

Non-Responsive



Table 5-20
Site S - Cost Estimate Summary Alternative S3:
In-Situ Treatment (SVE) of Mobile Source Area,
35 IAC 724 Compliant Vegetated Soil Cover Over Entire Site
and Institutional Controls

Non-Responsive



Table 5-20 (cont)
Site S - Cost Estimate Summary Alternative S3:
In-Situ Treatment (SVE) of Mobile Source Area,
35 IAC 724 Compliant Vegetated Soil Cover Over Entire Site
and Institutional Controls

Non-Responsive

Table 5-20 (cont)
Site S - Cost Estimate Summary Alternative S3:
In-Situ Treatment (SVE) of Mobile Source Area,
35 IAC 724 Compliant Vegetated Soil Cover Over Entire Site
and Institutional Controls

Non-Responsive

Table 5-20 (cont)
Site S - Cost Estimate Summary, Alternative S3:
In-Situ Treatment (SVE) of Mobile Source Area,
35 IAC 724 Compliant Vegetated Soil Cover Over Entire Site
and Institutional Controls

Non-Responsive

APPENDIX D
RISK CHARACTERIZATION SUMMARY TABLES

Table 1
Cancer Toxicity Data Summary

Pathway: Ingestion, Dermal							
Contaminant of Concern	Oral Cancer Slope Factor	Dermal Cancer Slope factor	Slope Factor Units	Weight of Evidence/ Cancer Guideline Description	Source	Date	
1,2,4-Trichlorobenzene	NA	NA	NA	D	IRIS	3/08	
1,2-Dichloroethane	9.10E-02	9.10E-02	(mg/kg-day) ⁻¹	B2	IRIS	3/08	
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA	
1,4-Dichlorobenzene	5.40E-03	5.40E-03	(mg/kg-day) ⁻¹	NA	CalEPA	1/08	
2,4-Dichlorophenol	NA	NA	NA	NA	NA	NA	
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	
4,4'-DDT	3.40E-01	3.40E-01	(mg/kg-day) ⁻¹	B2	IRIS	3/08	
4-Chloroaniline	5.40E-02	5.40E-02	(mg/kg-day) ⁻¹	C	PPRTV	9/30/02	
Arsenic	1.50E+00	1.50E+00	(mg/kg-day) ⁻¹	A	IRIS	3/08	
Benzene	3.35E-02(a)	3.35E-02	(mg/kg-day) ⁻¹	A	IRIS	3/08	
Benzo(a)pyrene	7.30E+00	7.30E+00	(mg/kg-day) ⁻¹	B2	IRIS	3/08	
Benzo(b)fluoranthene	7.30E-01	7.30E-01	(mg/kg-day) ⁻¹	B2		(b)	
Benzo(k)fluoranthene	7.30E-02	7.30E-02	(mg/kg-day) ⁻¹	B2		(c)	
Cadmium	NA	NA	NA	B1	IRIS	3/08	
Chlorobenzene	NA	NA	NA	D	IRIS	3/08	
Chloroform	NA	NA	NA	B2		(d)	
Chloromethane	NA	NA	NA	D	IRIS	3/08	
Dibenzo(a,h)anthracene	7.30E+00	7.30E+00	(mg/kg-day) ⁻¹	B2		(e)	
Dieldrin	1.60E+01	1.60E+01	(mg/kg-day) ⁻¹	B2	IRIS	3/08	
Dioxin TEQ-HH	1.50E+05	1.50E+05	(mg/kg-day) ⁻¹	B2	HEAST	1997	
Lead	NA	NA	NA	NA	NA	NA	
Manganese	NA	NA	NA	D	IRIS	3/08	
MCPA	NA	NA	NA	NA	NA	NA	
Naphthalene	NA	NA	NA	C	IRIS	3/08	
PCBs, Total	2.00E+00	2.00E+00	(mg/kg-day) ⁻¹	B2	IRIS	3/08	
Pentachlorophenol	1.20E-01	1.20E-01	(mg/kg-day) ⁻¹	B2	IRIS	3/08	
Tetrachloroethene	5.40E-01	5.40E-01	(mg/kg-day) ⁻¹	NA	CalEPA	1/08	
Toluene	NA	NA	NA	D	IRIS	3/08	
Trichloroethene	1.30E-02	1.30E-02	(mg/kg-day) ⁻¹	NA	CalEPA	1/08	
Xylenes, Total	NA	NA	NA	NA	NA	NA	
Pathway: Inhalation							
Contaminant of Concern	Unit Risk	Units	Inhalation Cancer Slope factor(f)	Slope Factor Units	Weight of Evidence/ Cancer Guideline Description	Source	Date
1,2,4-Trichlorobenzene	NA	NA	NA	(mg/kg/day) ⁻¹	D	IRIS	3/08
1,2-Dichloroethane	2.60E-05	(µg/m ³) ⁻¹	9.10E-02	(mg/kg/day) ⁻¹	B2	IRIS	3/08
1,2-Dichloroethene (total)	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	1.10E-05	(µg/m ³) ⁻¹	4.00E-02	(mg/kg/day) ⁻¹	NA	CalEPA	1/08
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA
Benzene	2.2E-06 - 7.8E-06 (a)	(µg/m ³) ⁻¹	1.74E-02	(mg/kg/day) ⁻¹	A	IRIS	3/08
Cadmium	1.80E-03	(µg/m ³) ⁻¹	6.30E+00	(mg/kg/day) ⁻¹	B1	IRIS	3/08
Chlorobenzene	NA	NA	NA	NA	D	IRIS	3/08
Chloroform	2.30E-05	(µg/m ³) ⁻¹	8.05E-02	(mg/kg/day) ⁻¹	B2	IRIS	3/08
Chloromethane	NA	NA	NA	NA	D	IRIS	3/08
Naphthalene	NA	NA	NA	NA	C	IRIS	3/08
Tetrachloroethene	5.90E-06	(µg/m ³) ⁻¹	2.10E-02	(mg/kg/day) ⁻¹	NA	CalEPA	1/08
Toluene	NA	NA	NA	NA	D	IRIS	3/08
Trichloroethene	2.00E-06	(µg/m ³) ⁻¹	7.00E-03	(mg/kg/day) ⁻¹	NA	CalEPA	1/08
Xylenes, Total	NA	NA	NA	NA	NA	NA	NA
Notes: NA: Not available IRIS: Integrated Risk Information System, EPA PPRTV: Provisional Peer Reviewed Toxicity Values CalEPA - California EPA HEAST - Health Effects Assessment Summary Tables PCB: Polychlorinated Biphenyls Dioxin TEQ-HH - 2,3,7,8-Tetrachlorodibenzo-p-dioxin Toxic Equivalents Concentration for Human Health MCPA - 2-methyl-4-chlorophenoxyacetic acid (a) - IRIS provides a range of CSFs and inhalation unit risks for benzene of (CSF 1.5E-02 to 5.5E-02 kg*day/mg and IUR 2.2E-06 to 7.8E-06 m ³ /ug) . The midpoint of the range is therefore used in the calculations. (b) CSF based on that for benzo(a)pyrene and applying a RPF of 0.1 per USEPA (1993b). (c) CSF based on that for benzo(a)pyrene and applying a RPF of 0.01 per USEPA (1993b). (d) The oral reference dose is considered protective of potential carcinogenic effects (IRIS, 3/08). (e) CSF based on that for benzo(a)pyrene and applying a RPF of 1 per USEPA (1993b). (f) - Converted from unit risk factor: Unit Risk Factor (m ³ /ug) x (70 kg x (1day/20m ³) x 1000 ug/mg).				A- Known Human Carcinogen B1- Probable human carcinogen - indicates that limited human data are available. B2- Probable human carcinogen - indicates sufficient evidence in animal and inadequate or no evidence in humans C- Possible human carcinogen D- Not classifiable as a human carcinogen E- Evidence of non-carcinogenicity			

Table 2 Non-Cancer Toxicity Data Summary									
Pathway: Ingestion, Dermal									
Contaminant of Concern	Chronic / Subchronic	Oral RfD value	Oral RfD Units	Dermal RfD Value	Dermal RfD Units	Primary Target Organ	Combined UF/MF	Sources of RfD, Target Organ	Date
1,2,4-Trichlorobenzene	Chronic	1.00E-02	mg/kg	1.00E-02	mg/kg	Increased Adrenal Weights; Vacuolization of Zona Fasciculata in the Cortex	1000 / 1	IRIS	3/08
1,2,4-Trichlorobenzene	Subchronic	1.00E-01	mg/kg	1.00E-01	mg/kg	Increased Adrenal Weights; Vacuolization of Zona Fasciculata in the Cortex	100 / 1 (2)	IRIS	3/08
1,2-Dichloroethane	Chronic	2.00E-02	mg/kg	2.00E-02	mg/kg	Increased Kidney Weight	3000 / 1	PPRTV	10/02
1,2-Dichloroethane	Subchronic	2.00E-01	mg/kg	2.00E-01	mg/kg	Increased Kidney Weight	300 / 1 (2)	PPRTV	10/02
1,2-Dichloroethene (total)	Chronic	2.00E-02 (a)	mg/kg	2.00E-02	mg/kg	Increased Serum Phosphates	1000 / 1	IRIS	3/08
1,2-Dichloroethene (total)	Subchronic	2.00E-01	mg/kg	2.00E-01	mg/kg	Increased Serum Phosphates	100 / 1 (2)	IRIS	3/08
1,4-Dichlorobenzene	Chronic	3.00E-02 (b)	mg/kg	3.00E-02	mg/kg	Liver Perturbations and Developmental Toxicity Effects	1000	PPRTV	4/29/97
1,4-Dichlorobenzene	Subchronic	7.00E-02	mg/kg	7.00E-02	mg/kg	Liver	100	ATSDR	11/07
2,4-Dichlorophenol	Chronic / Subchronic	3.00E-03	mg/kg	3.00E-03	mg/kg	Decreased Delayed Hypersensitivity Response	100 / 1	IRIS	3/08
2-Methylnaphthalene	Chronic / Subchronic (chr)	4.00E-03	mg/kg	4.00E-03	mg/kg	Pulmonary Alveolar Proteinosis	1000 / 1	IRIS	3/08
4,4'-DDT	Chronic / Subchronic	5.00E-04	mg/kg	5.00E-04	mg/kg	Liver Lesions	100 / 1	IRIS	3/08
4-Chloroaniline	Chronic / Subchronic	4.00E-03	mg/kg	4.00E-03	mg/kg	Nonneoplastic Lesions of Splenic Capsule	3000 / 1	IRIS	3/08
Arsenic	Chronic / Subchronic	3.00E-04	mg/kg	3.00E-04	mg/kg	Hyperpigmentation, Keratosis and Possible Vascular Complications	3 / 1	IRIS	3/08
Benzene	Chronic	4.00E-03	mg/kg	4.00E-03	mg/kg	Decreased Lymphocyte Count	300 / 1	IRIS	3/08
Benzene	Subchronic	1.20E-02	mg/kg	1.20E-02	mg/kg	Decreased Lymphocyte Count	100 / 1 (1)	IRIS	3/08
Benzo(a)pyrene	Chronic / Subchronic	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	Chronic / Subchronic	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	Chronic / Subchronic	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	Chronic / Subchronic (chr)	5.00E-04 (c)	mg/kg	2.50E-05	mg/kg	Significant Proteinuria	10 / 1	IRIS	3/08
Cadmium	Chronic / Subchronic (chr)	1.00E-03 (d)	mg/kg	2.50E-05	mg/kg	Significant Proteinuria	10 / 1	IRIS	3/08
Chlorobenzene	Chronic	2.00E-02	mg/kg	2.00E-02	mg/kg	Histopathologic Changes in Liver	1000 / 1	IRIS	3/08
Chlorobenzene	Subchronic	2.00E-01	mg/kg	2.00E-01	mg/kg	Histopathologic Changes in Liver	100 / 1 (2)	IRIS	3/08
Chloroform	Chronic / Subchronic (chr)	1.00E-02	mg/kg	1.00E-02	mg/kg	Moderate/Marked Fatty Cyst Formation in the Liver and Elevated SGPT	100 / 1	IRIS	3/08
Chloromethane	Chronic / Subchronic	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	Chronic / Subchronic	NA	NA	NA	NA	NA	NA	NA	NA
Dieldrin	Chronic	5.00E-05	mg/kg	5.00E-05	mg/kg	Liver Lesions	100 / 1	IRIS	3/08
Dieldrin	Subchronic	1.00E-04	mg/kg	1.00E-04	mg/kg	Neurological	100	ATSDR	11/07
Dioxin TEQ-HH	Chronic	1.00E-09	mg/kg	1.00E-09	mg/kg	Developmental	90	ATSDR	11/07
Dioxin TEQ-HH	Subchronic	2.00E-08	mg/kg	2.00E-08	mg/kg	Lymphatic Effects	30	ATSDR	11/07
Lead	Chronic / Subchronic	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	Chronic / Subchronic	2.40E-02 (e)	mg/kg	9.60E-04	mg/kg	CNS Effects (Other Effect: Impairment of Neurobehavioral Function)	1 / 3	IRIS	3/08
MCPA	Chronic / Subchronic	5.00E-04	mg/kg	5.00E-04	mg/kg	Kidney and Liver Toxicity	300 / 1	IRIS	3/08
Naphthalene	Chronic	2.00E-02	mg/kg	2.00E-02	mg/kg	Decreased mean terminal body weight in males	3000 / 1	IRIS	3/08
Naphthalene	Subchronic	2.00E-01	mg/kg	2.00E-01	mg/kg	Decreased mean terminal body weight in males	300 / 1 (2)	IRIS	3/08
PCBs, Total	Chronic	2.00E-05 (f)	mg/kg	2.00E-05	mg/kg	Ocular, Meibomian gland, Finger and Toenail, Immune Effects	300 / 1	IRIS	3/08
PCBs, Total	Subchronic	6.00E-05(f)	mg/kg	6.00E-05	mg/kg	Ocular, Meibomian gland, Finger and Toenail, Immune Effects	100 / 1 (1)	IRIS	3/08

Pentachlorophenol	Chronic / Subchronic	3.00E-02	mg/kg	3.00E-02	mg/kg	Liver and Kidney Pathology	100 / 1	IRIS	3/08
Tetrachloroethene	Chronic	1.00E-02	mg/kg	1.00E-02	mg/kg	Hepatotoxicity in Mice, Weight Gain in Rats	1000 / 1	IRIS	3/08
Tetrachloroethene	Subchronic	1.00E-01	mg/kg	1.00E-01	mg/kg	Hepatotoxicity in Mice, Weight Gain in Rats	100 / 1 (2)	IRIS	3/08
Toluene	Chronic	8.00E-02	mg/kg	8.00E-02	mg/kg	Increased Kidney Weight	3000 / 1	IRIS	3/08
Toluene	Subchronic	8.00E-01	mg/kg	8.00E-01	mg/kg	Increased Kidney Weight	300 / 1 (2)	IRIS	3/08
Trichloroethene	Chronic / Subchronic	NA	NA	NA	NA	NA	NA	NA	NA
Xylenes, Total	Chronic	2.00E-01	mg/kg	2.00E-01	mg/kg	Decreased body weight and increased mortality	1000 / 1	IRIS	3/08
Xylenes, Total	Subchronic	4.00E-01	mg/kg	4.00E-01	mg/kg	Neurological	1000	ATSDR	11/07
Pathway: Inhalation									
Contaminant of Concern	Chronic	Inhalation RfC value	Inhalation RfC Units	Inhalation RfD Value(g)	Inhalation RfD Units	Primary Target Organ	Combined UF/MF	Sources of RfC Target Organ	Date
1,2,4-Trichlorobenzene	Chronic	4.00E-03	mg/m ³	1.14E-03	mg/kg	Increased urinary porphyria	1000	PPRTV	10/16/02
1,2,4-Trichlorobenzene	Subchronic	4.00E-02	mg/m ³	1.14E-02	mg/kg	Increased urinary porphyria	100 (2)	PPRTV	10/16/02
1,2-Dichloroethane	Chronic / Subchronic (chr)	2.45E+00 (h)	mg/m ³	7.00E-01	mg/kg	Liver	90	ATSDR	11/07
1,2-Dichloroethane (total)	Chronic	6.00E-02 (i)	mg/m ³	1.71E-02	mg/kg	Liver and Lung	3000 / 1	PPRTV	3/1/06
1,2-Dichloroethane (total)	Subchronic	8.00E-01 (j)	mg/m ³	2.29E-01	mg/kg	Liver	1000	ATSDR	11/07
1,4-Dichlorobenzene	Chronic	8.00E-01	mg/m ³	2.29E-01	mg/kg	Increased liver weight	100 / 1	IRIS	3/08
1,4-Dichlorobenzene	Subchronic	1.20E+00	mg/m ³	3.43E-01	mg/kg	Liver effects	100	ATSDR	11/07
2-Methylnaphthalene	Chronic	3.00E-03 (k)	mg/m ³	8.57E-04	mg/kg	Nasal Effects; Hyperplasia and Metaplasia in respiratory and olfactory epithelium	3000 / 1	IRIS	3/08
2-Methylnaphthalene	Subchronic	9.00E-03 (k)	mg/m ³	2.57E-03	mg/kg	Nasal Effects; Hyperplasia and Metaplasia in respiratory and olfactory epithelium	1000 / 1 (1)	IRIS	3/08
Benzene	Chronic	3.00E-02	mg/m ³	8.57E-03	mg/kg	Decreased Lymphocyte Count	300 / 1	IRIS	3/08
Benzene	Subchronic	9.00E-02	mg/m ³	2.57E-02	mg/kg	Decreased Lymphocyte Count	100 / 1 (1)	IRIS	3/08
Cadmium	Chronic / Subchronic (chr)	2.00E-05	mg/m ³	5.71E-06	mg/kg	Kidney; Respiratory System	NA	CalEPA	2/05
Chlorobenzene	Chronic	5.00E-02	mg/m ³	1.43E-02	mg/kg	Liver and Kidney effects	1000 / 1	PPRTV	10/12/06
Chlorobenzene	Subchronic	5.00E-01	mg/m ³	1.43E-01	mg/kg	Liver and Kidney effects	100 / 1	PPRTV	10/12/06
Chloroform	Chronic / Subchronic (chr)	3.00E-01	mg/m ³	8.57E-02	mg/kg	Gastrointestinal system, kidney, development	NA	CalEPA	2/05
Chloromethane	Chronic	9.00E-02	mg/m ³	2.57E-02	mg/kg	Cerebellar lesions	1000 / 1	IRIS	3/08
Chloromethane	Subchronic	9.00E-01	mg/m ³	2.57E-01	mg/kg	Cerebellar lesions	100 / 1 (2)	IRIS	3/08
Naphthalene	Chronic	3.00E-03	mg/m ³	8.57E-04	mg/kg	Nasal Effects; Hyperplasia and Metaplasia in respiratory and olfactory epithelium	3000 / 1	IRIS	3/08
Naphthalene	Subchronic	9.00E-03	mg/m ³	2.57E-03	mg/kg	Nasal Effects; Hyperplasia and Metaplasia in respiratory and olfactory epithelium	1000 / 1 (1)	IRIS	3/08
Tetrachloroethene	Chronic / Subchronic (chr)	3.50E-02	mg/m ³	1.00E-02	mg/kg	Kidney, liver	NA	CalEPA	2/05
Toluene	Chronic / Subchronic (chr)	5.00E+00	mg/m ³	1.43E+00	mg/kg	Neurological effects in occupationally exposed workers	10 / 1	IRIS	3/08
Trichloroethene	Chronic / Subchronic (chr)	6.00E-01	mg/m ³	1.71E-01	mg/kg	Nervous system, eyes	100 / 1	CalEPA	2/05
Xylenes, Total	Chronic	1.00E-01	mg/m ³	2.86E-02	mg/kg	Impaired motor coordination	300 / 1	IRIS	3/08
Xylenes, Total	Subchronic	3.00E-01	mg/m ³	8.57E-02	mg/kg	Impaired motor coordination	100 / 1 (1)	IRIS	3/08
<p>Notes - Chronic values used where sub-chronic values are not available, denoted with "chr".</p> <p>a. Value for trans-1,2-Dichloroethane. No value on IRIS for total or cis-1,2-Dichloroethane.</p> <p>b. Retired value.</p> <p>c. Reference dose for water used to evaluate potential groundwater and surface water exposures.</p> <p>PCB: Polychlorinated Biphenyls 2,3,7,8-TCDD TEQ: 2,3,7,8 Tetrachlorodibenzo-p-dioxin toxic equivalent Concentration for Human Health NA: Value not available/not calculated UF/MF: Uncertainty factor/modifying factor IRIS: Integrated Risk Information System CalEPA - California Environmental Protection Agency</p>									

<p>d. Reference dose for food used to evaluate potential soil exposures.</p> <p>e. When assessing exposure to manganese in soil or drinking water, IRIS (03/08) recommends applying a modifying factor of 3 to the oral RfD of 0.14 mg/kg-day. The USEPA Region 9 PRG table (USEPA, 2004) also indicates that the average dietary manganese content of the US diet (5 mg/day) be subtracted from the critical dose of 10 mg/day. Therefore, the RfD is (10 mg/day - 5 mg/day)/Modifying Factor (3) = 1.67 mg/day / 70 kg = 0.024 mg/kg-day.</p> <p>f. Value for Aroclor 1254.</p> <p>g. Converted from reference concentration: $RfC \text{ (mg/m}^3\text{)} \times (20 \text{ m}^3 \text{ air/day}) / 70 \text{ kg body weight}$.</p> <p>h. MRL for 1,2-Dichloroethane converted to RfC as follows: $MRL \text{ (0.6 ppm)} \times \text{Molecular Weight (98.96 g/mol)} / \text{Molar Volume of Air in liters (24.45)}$.</p> <p>i. Value for 1,2-dichloroethene (trans). Retired value.</p> <p>j. Value for 1,2-dichloroethene (trans). MRL converted to RfC as follows: $MRL \text{ (ppm)} \times \text{Molecular Weight (g/mol)} / \text{Molar Volume of Air in liters (24.45)}$. Intermediate MRL.</p> <p>k. Value for Naphthalene used as surrogate based on structural similarities.</p>	<p>ATSDR – Agency for Toxic Substances and Disease Registry</p> <p>PPRTV – Provisional Peer Reviewed Toxicity Value</p> <p>RfC – Reference Concentration</p> <p>RfD – Reference dose</p> <p>Modifications to adjustment factors to account for subchronic:</p> <p>1 - Uncertainty factor of 3 for sub-chronic to chronic exposure removed to derive subchronic reference dose.</p> <p>2 - Uncertainty factor of 10 for sub-chronic to chronic exposure removed to derive subchronic reference dose.</p>
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Table 3 Risk Characterization Summary for Construction Worker – Non-Carcinogens Site O								
Scenario Timeframe: Current / Future								
Receptor Population: Construction Worker								
Receptor Age: Adult								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Soil / Waste	Site O	PCBs, Total	Eyes, Nails, Immune	1.16	NA	0.589	1.75
	Excavation Air	Site O	Benzene	Immune	NA	0.908	NA	0.908
			Xylenes, Total	Nervous System	NA	4.64	NA	4.64
Soil / Waste Hazard Index =								7.3
Hazard Index Total =								7.3
Eyes Hazard Index =								1.75
Nails Hazard Index =								1.75
Immune Hazard Index =								2.66
Nervous System Hazard Index =								4.64
NA – Not applicable								
No contaminants were identified as COCs on the basis of their carcinogenic risk contribution.								

Table 4 Risk Characterization Summary for Construction Workers – Carcinogens Site O North							
Scenario Timeframe: Current / Future							
Receptor Population: Construction Worker							
Receptor Age: Adult							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Soil / Waste	Site O North	PCBs, Total	NCOC	NA	NCOC	NCOC
			Dioxin TEQ-HH	3.36E-4	NA	6.05E-5	3.97E-4
	Excavation Air	Site O North	Xylenes, Total	NA	NC	NA	NC
Soil / Waste Risk Total							3.97E-4
Leachate	Leachate	O-Leach-0-1	PCBS, Total	NCOC	NA	NCOC	NCOC
Leachate Risk Total							NA
Risk total =							3.97E-4
NA – Not applicable.							
NCOC – Not identified as a COC.							
NC – Not calculated; non-carcinogen							

Table 5 Risk Characterization Summary for Construction Worker – Non-Carcinogens Site O North								
Scenario Timeframe: Current / Future								
Receptor Population: Construction Worker								
Receptor Age: Adult								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Soil / Waste	Site O North	PCBs, Total	Eyes, Nails, Immune	21.8	NA	11	32.8
			Dioxin TEQ-HH	Immune	7.85	NA	1.41	9.26
	Excavation Air	Site O North	Xylenes, Total	Nervous System	NA	2.25	NA	2.25
Soil / Waste Hazard Index								44.3
Leachate	Leachate	O-Leach-0-1	PCBs, Total	Eyes, Nails, Immune	0.00179	NA	2.37	2.37
Leachate Hazard Index								2.37
Hazard Index Total =								46.7
Eyes Hazard Index =								35.2
Immune Hazard Index =								44.5
Nails Hazard Index =								35.2
Nervous System Hazard Index =								2.25
NA – Not applicable								

Table 6 Risk Characterization Summary for Construction Worker – Non-Carcinogens Site P								
Scenario Timeframe: Current / Future								
Receptor Population: Construction Worker								
Receptor Age: Adult								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Soil / Waste	Site P	PCBs, Total	Eyes, Nails, Immune	0.873	NA	0.442	1.32
	Excavation Air	Site P	Tetrachloroethene	Kidney Liver	NA	1.11	NA	1.11
Soil / Waste Hazard Index =								2.42
Hazard Index Total =								2.42
Eyes Hazard Index =								1.32
Immune Hazard Index =								1.32
Kidney Hazard Index =								1.11
Liver Hazard Index =								1.11
Nails Hazard Index =								1.32
NA – Not applicable								
No contaminants were identified as COCs on the basis of their carcinogenic risk contribution.								

Table 7 Risk Characterization Summary for Construction Worker – Non-Carcinogens Site Q North								
Scenario Timeframe: Current / Future								
Receptor Population: Construction Worker								
Receptor Age: Adult								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Soil / Waste	Site Q North	PCBs, Total	Eyes, Nails, Immune	1.06	NA	0.538	1.6
			Dioxin TEQ-HH	Immune	0.593	NA	0.107	0.7
Soil / Waste Hazard Index								2.3
Leachate	Leachate	Q North – Leach – Q 1	2,4-Dichlorophenol	Nervous System	0.117	NA	4.13	4.24
			Pentachlorophenol	Kidney, Liver	0.000411	NA	0.484	0.484
			PCBs, Total	Eyes, Nails, Immune	0.00156	NA	2.07	2.07
Leachate Hazard Index								6.8
Hazard Index Total =								9.1
Eyes Hazard Index =								3.67
Immune Hazard Index =								4.37
Nails Hazard Index =								3.67
Nervous System Hazard Index =								4.24
NA – Not applicable								
No contaminants were identified as COCs on the basis of their carcinogenic risk contribution.								

Table 8 Risk Characterization Summary for Construction Worker – Non-Carcinogens Site Q South								
Scenario Timeframe: Current / Future								
Receptor Population: Construction Worker								
Receptor Age: Adult								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Soil / Waste	Site Q South	Cadmium	Kidney	1.27	NA	0.153	1.42
	Excavation Air	Site Q South	Cadmium	Kidney, Respiratory	NA	1.2	NA	1.2
Soil / Waste Hazard Index =								2.63
Hazard Index Total =								2.63
Kidney Hazard Index =								2.63
Respiratory Hazard Index =								1.20
NA – Not applicable								
No contaminants were identified as COCs on the basis of their carcinogenic risk contribution.								

Table 9 Risk Characterization Summary for Construction Workers – Carcinogens Site R							
Scenario Timeframe: Current / Future Receptor Population: Construction Worker Receptor Age: Adult							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Soil / Waste	Site R	PCBs, Total	NCOC	NA	NCOC	NCOC
	Excavation Air	Site R	Benzene	NA	NCOC	NA	NCOC
			Chlorobenzene	NA	NC	NA	NC
			Tetrachloroethene	NA	5.08E-05	NA	5.08E-05
			Trichloroethene	NA	2.38E-05	NA	2.38E-05
Soil / Waste Risk Total							7.46E-5
Leachate	Leachate	R-Leach-R-1	1,2-Dichloroethane	5.00E-06	NA	2.44E-05	2.94E-05
			Benzene	NCOC	NA	NCOC	NCOC
			Chloroform	NC	NA	NC	NC
			Tetrachloroethene	1.04E-03	NA	6.02E-02	6.12E-02
			Toluene	NC	NA	NC	NC
			Trichloroethene	2.90E-05	NA	4.69E-04	4.98E-04
			2,4-Dichlorophenol	NC	NA	NC	NC
			2-Methylnaphthalene	NC	NA	NC	NC
			4-Chloroaniline	NCOC	NA	NCOC	NCOC
			Benzo(a)pyrene	3.67E-08	NA	7.71E-05	7.71E-05
			Benzo(b)fluoranthene	2.90E-07	NA	6.19E-04	6.20E-04
			Benzo(k)fluoranthene	2.87E-08	NA	5.70E-05	5.71E-05
			Dibenzo(a,h)anthracene	3.88E-08	NA	1.26E-04	1.26E-04
			4,4'-DDT	NCOC	NA	NCOC	NCOC
			MCPA	NC	NA	NC	NC
			PCBs, Total	9.77E-06	NA	1.29E-02	1.29E-02
			Dioxin TEQ-HH	1.18E-08	NA	2.27E-05	2.27E-05
			Manganese	NC	NA	NC	NC
	Trench Air	R-Leach-R-1	1,2-Dichloroethane	NA	1.11E-03	NA	1.11E-03
			1,2-Dichloroethene (total)	NA	NC	NA	NC
			Benzene	NA	1.57E-04	NA	1.57E-04
			Chlorobenzene	NA	NC	NA	NC
			Chloroform	NA	1.56E-04	NA	1.56E-04
			Tetrachloroethene	NA	7.48E-03	NA	7.48E-03
			Toluene	NA	NC	NA	NC
			Trichloroethene	NA	3.21E-03	NA	3.21E-03
			Xylenes, Total	NA	NC	NA	NC
			1,2,4-Trichlorobenzene	NA	NC	NA	NC
			2-Methylnaphthalene	NA	NC	NA	NC
			Naphthalene	NA	NC	NA	NC
Leachate Risk Total							1.21E-2
Risk total =							8.78E-2
NA – Not applicable. NCOC – Not identified as a COC. NC – Not calculated; non-carcinogen.							

Table 10 Risk Characterization Summary for Construction Worker – Non-Carcinogens Site R								
Scenario Timeframe: Current / Future								
Receptor Population: Construction Worker								
Receptor Age: Adult								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Soil / Waste	Site R	PCBs, Total	Eye, Nails, Immune	0.681	NA	0.345	1.03
	Excavation Air	Site R	Benzene	Immune	NA	0.543	NA	0.543
			Chlorobenzene	Kidney, Liver	NA	0.504	NA	0.504
			Tetrachloroethene	Kidney, Liver	NA	16.9	NA	16.9
			Trichloroethene	Nervous system, Eye	NA	1.39	NA	1.39
Soil / Waste Hazard Index								20.4
Leachate	Leachate	R-Leach-R-1	1,2-Dichloroethane	Kidney	NCOC	NA	NCOC	NCOC
			Benzene	Immune	0.239	NA	3.67	3.91
			Chloroform	Liver, Hematological	0.06	NA	0.527	0.587
			Tetrachloroethene	Liver, Body weight	1.34	NA	78	79.4
			Toluene	Kidney	0.0424	NA	1.46	1.50
			Trichloroethene	--	NC	NA	NC	NC
			2,4-Dichlorophenol	Nervous System	0.0159	NA	0.558	0.574
			2-Methylnaphthalene	Respiratory	0.00794	NA	1.05	1.06
			4-Chloroaniline	Spleen	0.264	NA	1.75	2.02
			Benzo(a)pyrene	--	NC	NA	NC	NC
			Benzo(b)fluoranthene	--	NC	NA	NC	NC
			Benzo(k)fluoranthene	--	NC	NA	NC	NC
			Dibenzo(a,h)anthracene	--	NC	NA	NC	NC
			4,4'-DDT	Liver	0.00321	NA	3.56	3.56
			MCPA	Kidney, Liver	4.28	NA	154	158
			PCBs, Total	Eye, Nails, Immune	5.70	NA	7540	7540
			Dioxin TEQ-HH	Immune	0.000275	NA	0.529	0.529
			Manganese	Nervous System	0.0204	NA	0.336	0.357
	Trench Air	R-Leach-R-1	1,2-Dichloroethane	Liver	NA	1.22	NA	1.22
			1,2-Dichloroethene (total)	Liver	NA	2.75	NA	2.75
			Benzene	Immune	NA	24.7	NA	24.7
			Chlorobenzene	Kidney, Liver	NA	2.77	NA	2.77
			Chloroform	Gastrointestinal, Kidney, Developmental	NA	1.58	NA	1.58
			Tetrachloroethene	Kidney, Liver	NA	2490	NA	2490
			Toluene	Nervous system	NA	4.62	NA	4.62
			Trichloroethene	Nervous system, Eye	NA	187	NA	187
			Xylenes, Total	Nervous system	NA	5.14	NA	5.14
			1,2,4-Trichlorobenzene	Kidney	NA	0.864	NA	0.864
			2-Methylnaphthalene	Nasal	NA	2.11	NA	2.11
			Naphthalene	Nasal	NA	0.696	NA	0.696
Leachate Hazard Index =								2730
Hazard Index Total =								10500
Body weight Hazard Index =								79.4
Developmental Hazard Index =								1.58
Eye Hazard Index =								7730
Gastrointestinal Hazard Index =								1.58
Hematological Hazard Index =								0.587
Immune Hazard Index =								7570
Kidney Hazard Index =								2680
Liver Hazard Index =								2760
Nails Hazard Index =								7540
Nasal Hazard Index =								2.80
Nervous System Hazard Index =								199
Respiratory Hazard Index =								1.06
Spleen Hazard Index =								2.02
NA – Not applicable NCOC – Not identified as a COC.								
NC – Not calculated; carcinogen.								

Table 11 Risk Characterization Summary for Construction Worker -- Non-Carcinogens Site S								
Scenario Timeframe: Current / Future								
Receptor Population: Construction Worker								
Receptor Age: Adult								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Soil / Waste	Site S	PCBs, Total	Eye, Nails, Immune	7.21	NA	3.65	10.9
	Excavation Air	Site S	Xylenes, Total	Nervous System	NA	1.87	NA	1.87
Soil / Waste Hazard Index =								12.7
Hazard Index Total =								12.7
Eye Hazard Index =								10.9
Immune Hazard Index =								10.9
Nails Hazard Index =								10.9
Nervous System Hazard Index =								1.87
NA - Not applicable								
No contaminants were identified as COCs on the basis of their carcinogenic risk contribution.								

Table 12 Risk Characterization Summary for Outdoor Industrial Workers – Carcinogens Site O							
Scenario Timeframe: Current / Future Receptor Population: Outdoor Industrial Worker Receptor Age: Adult							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Surface Soil	Site O	Dioxin TEQ-HH	1.35E-4	NA	5.34E-5	1.88E-4
			Benzene	NA	6.65E-5	NA	6.65E-5
	Ambient Air	Site O	Xylenes, Total	NA	NC	NA	NC
			Soil / Waste Risk Total				
Groundwater	Ambient Air	O-AA-Clay-2-22	Benzene	NA	9.95E-5	NA	9.95E-5
Groundwater Risk Total							9.95E-5
Risk total =							3.54E-4
NA – Not applicable.							
NC – Not calculated; non-carcinogen							

Table13 Risk Characterization Summary for Outdoor Industrial Workers – Non-Carcinogens Site O								
Scenario Timeframe: Current / Future								
Receptor Population: Outdoor Industrial Worker								
Receptor Age: Adult								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Surface Soil	Site O	Dioxin TEQ-HH	Developmental	2.52	NA	0.997	3.51
			Benzene	Immune	NA	1.25	NA	1.25
	Ambient Air	Site O	Xylenes, Total	*Nervous System	NA	6.41	NA	6.41
			Soil / Waste Hazard Index					
Groundwater	Ambient Air	O-AA-Clay-2-22	Benzene	Immune	NA	1.87	NA	1.87
Groundwater Hazard Index								1.87
Hazard Index Total								13
Developmental Hazard Index =								3.51
Immune Hazard Index =								3.13
Nervous Hazard Index =								6.41
NA – Not applicable								

Table 14 Risk Characterization Summary for Outdoor Industrial Workers – Carcinogens Site O North							
Scenario Timeframe: Current / Future Receptor Population: Outdoor Industrial Worker Receptor Age: Adult							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Surface Soil	Site O North	PCBs, Total	3.13E-4	NA	3.48E-4	6.61E-4
			Dioxin TEQ-HH	1.03E-3	NA	4.06E-4	1.43E-3
	Excavation Air	Site O North	Xylenes, Total	NA	NC	NA	NC
			1,2,4-Trichlorobenzene	NA	NCOC	NA	NCOC
			Soil / Waste Risk Total				2.09E-3
Risk total =						2.09E-3	
NA – Not applicable. NCOC – Not identified as a COC. NC – Not calculated; non-carcinogen.							

Table 15 Risk Characterization Summary for Outdoor Industrial Workers – Non-Carcinogens Site O North								
Scenario Timeframe: Current / Future								
Receptor Population: Outdoor Industrial Worker								
Receptor Age: Adult								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Surface Soil	Site O North	PCBs, Total	Eyes, Nails, Immune	21.9	NA	24.4	46.3
			Dioxin TEQ-HH	Developmental	19.1	NA	7.58	26.7
	Ambient Air	Site O North	Xylenes, Total	Nervous System	NA	3.16	NA	3.16
			1,2,4-Trichlorobenzene	Kidney	NA	1.40	NA	1.40
Soil / Waste Hazard Index =								77.5
Hazard Index Total =								77.5
Developmental Hazard Index =								26.7
Eyes Hazard Index =								46.3
Immune Hazard Index =								46.3
Kidney Hazard Index =								1.4
Nails Hazard Index =								46.3
Nervous System Hazard Index =								3.16
NA— Not applicable								

<p align="center">Table 16 Risk Characterization Summary for Outdoor Industrial Workers – Non-Carcinogens Site Q Central</p>								
<p>Scenario Timeframe: Current / Future Receptor Population: Outdoor Industrial Worker Receptor Age: Adult</p>								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Surface Soil	Site Q Central	Dioxin TEQ-HH	Developmental	0.777	NA	0.308	1.08
Soil / Waste Hazard Index =								1.08
Hazard Index Total =								1.08
Developmental Hazard Index =								1.08
<p>NA – Not applicable No contaminants were identified as COCs on the basis of their carcinogenic risk contribution.</p>								

Table 17 Risk Characterization Summary for Outdoor Industrial Workers – Non-Carcinogens Site Q South								
Scenario Timeframe: Current / Future								
Receptor Population: Outdoor Industrial Worker								
Receptor Age: Adult								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Surface Soil	Site Q South	Dioxin TEQ-HH	Developmental	1.38	NA	0.545	1.92
			Cadmium	Kidney	2.72	NA	0.717	3.43
Soil / Waste Hazard Index =								5.35
Hazard Index Total =								5.35
Kidney Hazard Index =								3.43
Developmental Hazard Index =								1.92
NA – Not applicable								

Table 18 Risk Characterization Summary for Outdoor Industrial Workers – Carcinogens Site Q South									
Scenario Timeframe: Current / Future Receptor Population: Outdoor Industrial Worker Receptor Age: Adult									
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk					
				Ingestion	Inhalation	Dermal	Exposure Routes Total		
Soil / Waste	Surface Soil	Site Q South	Dioxin TEQ-HH	7.37E-5	NA	2.92E-5	1.03E-4		
			Cadmium	NC	NA	NC	NC		
Soil / Waste Risk Total						1.03E-4			
Risk total =						1.03E-4			
NA – Not applicable.									
NC – Not calculated; non-carcinogen									

Table 19 Risk Characterization Summary for Outdoor Industrial Worker – Carcinogens Site R							
Scenario Timeframe: Current / Future Receptor Population: Outdoor Industrial Worker Receptor Age: Adult							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Ambient Air	Site R	1,2-Dichloroethane	NA	5.46E-05	NA	5.46E-05
			Chlorobenzene	NA	NC	NA	NC
			Tetrachloroethene	NA	5.84E-04	NA	5.84E-04
			Trichloroethene	NA	2.73E-04	NA	2.73E-04
			1,2,4-Trichlorobenzene	NA	NC	NA	NC
Soil / Waste Risk Total							9.11E-4
Leachate	Ambient Air	R-Leach-R-1	1,2-Dichloroethane	NA	3.99E-03	NA	3.99E-03
			1,2-Dichloroethene (total)	NA	NC	NA	NC
			Benzene	NA	2.24E-03	NA	2.24E-03
			Chlorobenzene	NA	NC	NA	NC
			Chloroform	NA	1.70E-03	NA	1.70E-03
			Chloromethane	NA	NC	NA	NC
			Tetrachloroethene	NA	3.31E-01	NA	3.31E-01
			Toluene	NA	NC	NA	NC
			Trichloroethene	NA	7.82E-02	NA	7.82E-02
			Xylenes, Total	NA	NC	NA	NC
Leachate Risk Total							4.17E-1
Risk total =							4.18E-1
NA – Not applicable.							
NC – Not calculated; non-carcinogen.							

Table 20 Risk Characterization Summary for Outdoor Industrial Worker – Non-Carcinogens Site R												
Scenario Timeframe: Current/ Future												
Receptor Population: Outdoor Industrial Worker												
Receptor Age: Adult												
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)							
					Ingestion	Inhalation	Dermal	Exposure Routes Total				
Soil / Waste	Ambient Air	Site R	1,2-Dichloroethane	Liver	NA	NCOC	NA	NCOC				
			Chlorobenzene	Kidney, Liver	NA	2.31	NA	2.31				
			Tetrachloroethene	Kidney, Liver	NA	7.78	NA	7.78				
			Trichloroethene	Nervous system, Eye	NA	NCOC	NA	NCOC				
			1,2,4-Trichlorobenzene	Kidney	NA	0.846	NA	0.846				
Soil / Waste Hazard Index								10.9				
Leachate	Ambient Air	R-Leach-R-1	1,2-Dichloroethane	Liver	NA	NCOC	NA	NCOC				
			1,2-Dichloroethene (total)	Liver, Respiratory	NA	10.2	NA	10.2				
			Benzene	Immune	NA	42.2	NA	42.2				
			Chlorobenzene	Kidney, Liver	NA	8.30	NA	8.30				
			Chloroform	Gastrointestinal, Kidney, Developmental	NA	0.689	NA	0.689				
			Chloromethane	Brain	NA	3.30	NA	3.30				
			Tetrachloroethene	Kidney, Liver	NA	4410	NA	4410				
			Toluene	Nervous system	NA	3.53	NA	3.53				
			Trichloroethene	Nervous system, Eye	NA	182	NA	182				
			Xylenes, Total	Nervous system	NA	8.92	NA	8.92				
1,4-Dichlorobenzene								Liver	NA	NCOC	NA	NCOC
Leachate Hazard Index =								4670				
Hazard Index Total =								4680				
Brain Hazard Index =								3.30				
Developmental Hazard Index =								0.689				
Eye Hazard Index =								182				
Gastrointestinal Hazard Index =								0.689				
Immune Hazard Index =								42.2				
Kidney Hazard Index =								4430				
Liver Hazard Index =								4440				
Nervous system Hazard Index =								195				
Respiratory Hazard Index =								10.2				
NA – Not applicable												
NCOC – Not identified as a COC.												

Table 21 Risk Characterization Summary for Outdoor Industrial Workers – Carcinogens Site S							
Scenario Timeframe: Current / Future							
Receptor Population: Outdoor Industrial Worker							
Receptor Age: Adult							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Surface Soil	Site S	PCBs, Total	4.45E-4	NA	4.95E-4	9.40E-4
	Ambient Air	Site S	Chlorobenzene	NA	NC	NA	NC
			Xylenes, Total	NA	NC	NA	NC
			1,4-Dichlorobenzene	NA	3.2E-5	NA	3.2E-5
Soil / Waste Risk Total						9.72E-4	
Risk total =						9.72E-4	
NA – Not applicable.							
NC – Not calculated; non-carcinogen.							

Table 22 Risk Characterization Summary for Outdoor Industrial Workers – Non-Carcinogens Site S								
Scenario Timeframe: Current / Future								
Receptor Population: Outdoor Industrial Worker								
Receptor Age: Adult								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Surface Soil	Site S	PCBs, Total	Eyes, Nails, Immune	31.1	NA	34.6	65.8
	Ambient Air	Site S	Chlorobenzene	Kidney, Liver	NA	1.39	NA	1.39
			Xylenes, Total	Nervous system	NA	2.66	NA	2.66
			1,4-Dichlorobenzene	Liver	NA	NCOC	NA	NCOC
Soil / Waste Hazard Index =							69.8	
Hazard Index Total =							69.8	
Eyes Hazard Index =							65.8	
Immune Hazard Index =							65.8	
Kidney Hazard Index =							1.39	
Liver Hazard Index =							1.39	
Nails Hazard Index =							65.8	
Nervous system Hazard Index =							2.66	
NA – Not applicable								
NCOC – Not identified as a COC.								

Table 23 Risk Characterization Summary for Recreational Fisher – Carcinogens . Site Q South (Large Pond)							
Scenario Timeframe: Current / Future							
Receptor Population: Recreational Fisher							
Receptor Age: Adult							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish Tissue	Fish Tissue	Site Q South Large Pond	Dieldrin	7.84E-5	NA	NA	7.84E-5
		Black Bullhead Fillet	PCBs, Total	3.79E-4	NA	NA	3.79E-4
Fish Tissue Risk Total							4.57E-4
Risk total =							4.57E-4
NA – Not applicable.							

Table 24 Risk Characterization Summary for Recreational Fisher – Non-Carcinogens Site Q South (Large Pond)								
Scenario Timeframe: Current / Future								
Receptor Population: Recreational Fisher								
Receptor Age: Adult								
Medium /	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish Tissue	Fish Tissue	Site Q South Large Pond	Dieldrin	Liver	NCOC	NA	NA	NCOC
		Black Bullhead Fillet	PCBs, Total	Eyes, Nails, Immune	22.1	NA	NA	22.1
Fish Tissue Hazard Index =								22.1
Hazard Index Total =								22.1
Eyes Hazard Index =								22.1
Immune Hazard Index =								22.1
Nails Hazard Index =								22.1
NA – Not applicable								
NCOC – Not identified as a COC.								

Table 25 Risk Characterization Summary for Recreational Fisher – Carcinogens Site Q South (Large Pond)							
Scenario Timeframe: Current / Future Receptor Population: Recreational Fisher Receptor Age: Adult							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish Tissue	Fish Tissue	Site Q South - Large Pond - Carp	Benzo(a)pyrene	6.44E-5	NA	NA	6.44E-5
			Dieldrin	1.49E-4	NA	NA	1.49E-4
			PCBs, Total	9.82E-4	NA	NA	9.82E-4
			Dioxin TEQ-HH	1.12E-4	NA	NA	1.12E-4
			Arsenic	6.02E-5	NA	NA	6.02E-5
Fish Tissue Risk Total						1.37E-3	
Risk total =						1.37E-3	
NA – Not applicable.							

Table 26 Risk Characterization Summary for Recreational Fisher – Non-Carcinogens Site Q South (Large Pond)								
Scenario Timeframe: Current / Future								
Receptor Population: Recreational Fisher								
Receptor Age: Adult								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Fish Tissue	Fish Tissue	Site Q South - Large Pond - Carp	Benzo(a)pyrene	--	NC	NA	NA	NC
			Dieldrin	Liver	NCOC	NA	NA	NCOC
			PCBs, Total	Eye, Nails, Immune	57.3	NA	NA	57.3
			Dioxin TEQ-HH	Developmental	1.75	NA	NA	1.75
			Arsenic	Skin, Vascular	NCOC	NA	NA	NCOC
Fish Tissue Hazard Index =								59.0
Hazard Index Total =								59.0
Developmental Hazard Index =								1.75
Eye Hazard Index =								57.3
Immune Hazard Index =								57.3
Nails Hazard Index =								57.3
NA – Not applicable								
NCOC – Not identified as a COC.								
NC – Not calculated; carcinogen.								

<p align="center">Table 27 Risk Characterization Summary for Recreational Fisher – Carcinogens Site Q South (Small Pond)</p>							
<p>Scenario Timeframe: Current / Future Receptor Population: Recreational Fisher Receptor Age: Adult</p>							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Q South Small Pond	Benzo(a)pyrene	1.24E-7	NA	2.72E-4	2.72E-4
Surface Water Risk Total							2.72E-4
Risk total =							2.72E-4
NA – Not applicable.							
No contaminants were identified as COCs on the basis of their non-carcinogenic risk contribution.							

Table 28 Risk Characterization Summary for Trespassing Teenager – Non-Carcinogens Site O North								
Scenario Timeframe: Current / Future								
Receptor Population: Trespassing Teenager								
Receptor Age: Adolescent								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Surface Soil	Site O North	PCBs, Total	Eye, Nails, Immune	4.46	NA	1.02	5.48
			Dioxin TEQ-HH	Developmental	3.90	NA	0.316	4.22
Soil / Waste Hazard Index =						9.70		
Hazard Index Total =						9.70		
Developmental Hazard Index =						4.22		
Eye Hazard Index =						5.48		
Immune Hazard Index =						5.48		
Nails Hazard Index =						5.48		
NA – Not applicable								

Table 29 Risk Characterization Summary for Trespassing Teenager – Carcinogens Site O North								
Scenario Timeframe: Current / Future								
Receptor Population: Trespassing Teenager								
Receptor Age: Adolescent								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	
Soil / Waste	Surface Soil	Site O North	PCBs, Total	NCOC	NA	NCOC	NCOC	
			Dioxin TEQ-HH	1.92E-7	NA	9.92E-5	9.94E-5	
Soil / Waste Risk Total					9.94E-5			
Risk total =					9.94E-5			
NA – Not applicable.								
NCOC – Not identified as a COC.								

Table 30 Risk Characterization Summary for Trespassing Teenager – Carcinogens Site Q South (Small Pond)							
Scenario Timeframe: Current / Future							
Receptor Population: Trespassing Teenager							
Receptor Age: Adolescent							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Site Q South - Small Pond	Benzo(a)pyrene	6.00E-8	NA	2.10E-4	2.10E-4
Surface Water Risk Total							2.10E-4
Risk total =							2.10E-4
NA – Not applicable.							
No contaminants were identified as COCs on the basis of their non-carcinogenic risk contribution.							

Table 31 Risk Characterization Summary for Trespassing Teenager – Carcinogens Site R							
Scenario Timeframe: Current / Future Receptor Population: Trespassing Teenager. Receptor Age: Adolescent							
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Leachate	Ambient Air	R-Leach-RI	1,2-Dichloroethane	NA	6.70E-5	NA	6.70E-5
			Benzene	NA	NCOC	NA	NCOC
			Tetrachloroethene	NA	5.56E-3	NA	5.56E-3
			Trichloroethene	NA	1.31E-3	NA	1.31E-3
Leachate Risk Total						6.94E-3	
Risk total =						6.94E-3	
NA – Not applicable. NCOC – Not identified as a COC.							

Table 32 Risk Characterization Summary for Trespassing Teenager – Non-Carcinogens Site R								
Scenario Timeframe: Current / Future								
Receptor Population: Trespassing Teenager								
Receptor Age: Adolescent								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Leachate	Ambient Air	R-Leach-R1	1,2-Dichloroethane	Liver	NA	NCOC	NA	NCOC
			Benzene	Immune	NA	1.61	NA	1.61
			Tetrachloroethene	Kidney, Liver	NA	169	NA	169
			Trichloroethene	Nervous system, Eye	NA	6.97	NA	6.97
					Hazard Index Total = 178			
					Eye Hazard Index = 6.97			
					Nervous system Hazard Index = 6.97			
					Immune Hazard Index = 1.61			
					Kidney Hazard Index = 169			
					Liver Hazard Index = 169			
NA – Not applicable								
NCOC – Not identified as a COC.								

Table 33 Risk Characterization Summary for Trespassing Teenager – Non-Carcinogens Site S								
Scenario Timeframe: Current / Future Receptor Population: Trespassing Teenager Receptor Age: Adolescent								
Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk (Hazard Index)			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil / Waste	Surface Soil	Site S	PCBs, Total	Eye, Nails, Immune	6.34	NA	1.44	7.79
Soil / Waste Hazard Index =								7.79
Hazard Index Total =								7.79
Eye Hazard Index =								7.79
Nails Hazard Index =								7.79
Immune Hazard Index =								7.79
NA – Not applicable No contaminants were identified as COCs on the basis of their carcinogenic risk contribution.								

APPENDIX E
REMEDIAL GOAL FOR SURFACE SOILS

Remedial Goals for Surface Soil
 Sauget Area 2, St. Clair County, Illinois

Receptor and Site	EPC (mg/kg)	Cancer Calculated Risk	Noncancer Calculated Risk	Remedial Goals Based on Cancer Risk Level			Remedial Goals Based on Hazard Quotient Level			Final Remedial Goal	
				mg/kg			mg/kg			Value (mg/kg)	Basis
				1E-06	1E-05	1E-04	0.1	1	3		
Outdoor Industrial Workers - Site O											
Person 1 (C-10)	6.77E-03	2E-04	4	3.6E-05	3.6E-04	3.6E-03	1.9E-04	1.9E-03	5.8E-03	1.9E-03	HQ = 1 and ELCR < 1x10 ⁻⁴
Outdoor Industrial Workers - Site O North											
Person 1 (C-10)	709	7E-04	46	1	11	107	2	15	46	15	HQ = 1 and ELCR < 1x10 ⁻⁴
Person 2 (C-10)	5.15E-02	1E-03	27	3.6E-05	3.6E-04	3.6E-03	1.9E-04	1.9E-03	5.8E-03	1.9E-03	HQ = 1 and ELCR < 1x10 ⁻⁴
Trespassing Teenager - Site O North											
Person 1 (C-10)	709	3E-03	5	21	206	2060	13	129	388	129	HQ < 1 and ELCR < 1x10 ⁻⁴
Person 2 (C-10)	5.15E-02	1E-04	4	5.2E-04	5.2E-03	5.2E-02	1.2E-03	1.2E-02	3.7E-02	1.9E-03	HQ < 1 and ELCR < 1x10 ⁻⁴
Outdoor Industrial Workers - Site Q Central											
Person 1 (C-10)	2.07E-03	6E-05	1	3.6E-05	3.6E-04	3.6E-03	1.9E-04	1.9E-03	5.8E-03	1.9E-03	HQ = 1 and ELCR < 1x10 ⁻⁴
Outdoor Industrial Workers - Site Q South											
Person 1 (C-10)	1.70E-03	1E-04	2	3.6E-05	3.6E-04	3.6E-03	1.9E-04	1.9E-03	5.8E-03	1.9E-03	HQ = 1 and ELCR < 1x10 ⁻⁴
Person 2 (C-10)	3650	NC	3	NA	NA	NA	106	1064	3192	1064	HQ = 1
Outdoor Industrial Workers - Site S											
Person 1 (C-10)	1009	9E-04	66	1	11	107	2	15	46	15	HQ = 1 and ELCR < 1x10 ⁻⁴
Trespassing Teenager - Site S											
Person 1 (C-10)	1009	3E-05	8	21	206	2060	13	129	388	129	HQ < 1 and ELCR < 1x10 ⁻⁴

ELCR = excess lifetime cancer risk
 NA = Not applicable
 NC = Non-carcinogen

APPENDIX F

TSCA 40 CFR SECTION 761.61(C) DETERMINATION MEMO

TSCA 40 CFR Section 761.61(c) Determination

The Sauget Area 2 Site, located in Villages of Sauget and Cahokia, Illinois, consists of five inactive disposal areas (Sites O, P, Q, R, and S). Of these disposal sites, three are closed landfills (Sites P, Q, and R), one consists of four closed sludge lagoons (Site O), and one is a waste disposal site (Site S) associated with an abandoned solvent reclamation facility.

In 1993 Site Q was flooded and River currents unearthed a number of barrels containing hazardous waste. EPA conducted a Removal Action along the shore of the Mississippi River at Site Q Central; removing polychlorinated biphenyls (PCB) contaminated soils and drums exposed by erosion during the flood. On October 18, 1999, EPA initiated a second Removal Action at Site Q South. EPA excavated Site waste from eight different areas on 25-acres of Site Q South. Approximately 17,032 tons of waste, comprised of about 20 percent low-level waste (soil concentrations less than 50 parts per million (ppm) of PCBs) and 80 percent high-level waste (soil concentrations greater than 50 ppm of PCBs) were shipped off-Site for disposal. In addition, 3,271 drums of PCB wastes were removed and disposed off-Site. This second removal action was completed on April 5, 2000.

The remaining PCB containing areas at the Sauget Area 2 Site are the disposal areas at Sites O, P, Q, R, and S. These disposal areas contain municipal and industrial waste materials, including crushed or partially crushed drums, drum fragments, debris, and miscellaneous trash. Collectively, Sites O, P, Q, R, and S contain an estimated 4.5 million cubic yards of soil and waste. The lower portion of the waste at these Sites is below the water table. Remedial investigation sampling at Sites O, Q North, R, and S revealed PCB levels in the soil above 50 ppm. Soil samples taken from subsurface soil and waste showed PCB concentrations ranging from zero to 990 ppm at Site O; zero to 90 ppm at Q North, zero to 2 ppm at Site Q Central, zero to 10 ppm at Site Q South, zero to 130 ppm at Site R, and zero to 20 ppm at Site S.

Groundwater sampling results showed PCB concentrations ranging from non-detect to 0.2 ppm in the shallow hydraulic unit, non-detect to 8.0×10^{-4} ppm in the middle hydraulic unit, and non-detect to 1.2×10^{-3} ppm in the deep hydraulic unit. The Safe Drinking Water Act Maximum Contaminant Level for PCBs is .5 ppb or 5.0×10^{-4} ppm. Overall, because PCBs are relatively insoluble in water, concentrations of PCBs in groundwater occur sporadically and at comparatively low concentrations both upgradient and downgradient of the disposal areas, throughout the aquifer. Therefore, groundwater is not significantly impacted by PCBs and PCBs contaminated wastes are contained within the disposal areas.

The PCB-contaminated soils and wastes in the disposal areas in Sauget Area 2 Sites O, Q North, R, and S meet the definition of a PCB remediation waste as defined under 40 CFR § 761.3 because the soils and wastes contain PCBs as a result of a spill, release or unauthorized disposal which occurred prior to April 18, 1978. These PCB remediations are regulated for cleanup and disposal under 40 CFR Part 761. Under 40 CFR § 761.61(c), PCB remediation waste may be disposed of in a manner other than prescribed under Section 761.61(a) or (b), provided EPA determines that the method of disposal does not result in an unreasonable risk of

Sauget Area 2, OU 1 ROD

injury to health or the environment. In accordance with the requirements under TSCA and 40 CFR § 761.61(c), I have reviewed the Administrative Record for the Sauget Area 2 Site (Site) and considered the Selected Remedy for OU1 at the Sauget Area 2 Site.

The Selected Remedy for OU1 consists of: Site consists of:

- Site O and O North: Alternative O2- 35 IAC §724 Compliant Soil Cap Over Identified Waste Areas and Institutional and Access Controls;
- Site P: Alternative P3- Non-aqueous phase liquid (NAPL) Collection at Well (LEACH P-1), Asphalt Cap over Potentially Mobile Source Area (SA-P-3/AT-P-5), 35 IAC § 807 Solid Waste Landfill Cap Over Remainder of Identified Waste Areas, Vapor Intrusion Mitigation, and Institutional and Access Controls;
- Site Q North: Alternative QN2- 35 IAC §724 Compliant Crushed Rock Cap Over Dogleg Area, Vapor Intrusion Mitigation, and Institutional and Access Controls;
- Site Q Central: Alternative QC3- In-situ Soil Vapor Extraction (SVE) at Mobile Source Area (AT-Q32), 35 IAC §724 Compliant Crushed Rock Cap Over Identified Waste Areas, Shoreline Erosion Protection, and Institutional and Access Controls;
- Site Q South: Alternative QS3- Removal of Intact Drums at AT-Q35, 35 IAC §724 Compliant Cap Over Identified Waste Areas, and Institutional and Access Controls;
- Site R: Alternative R2- 35 IAC §724 Compliant Soil Cap Over Entire Site and Institutional and Access Controls; and
- Site S: Alternative S3- In-Situ SVE of Mobile Source Area, 35 IAC §724 Compliant Soil Cap Over Entire Site and Institutional and Access Controls.

This Selected Remedy for OU1 at the Sauget Area 2 Site addresses principal threat wastes¹ that are present at the Site. Previous removal actions conducted by EPA at Site Q Central and Site Q South already have removed principal threat wastes by excavating and disposing off-Site approximately 14,000 tons of high-level polychlorinated biphenyls (PCB) contaminated soil and 3,271 drums. EPA also ordered the construction of a Groundwater Migration and Control System (GMCS) next to the Mississippi River as an early interim OU2 groundwater remedy to capture and treat area groundwater before it releases to the River.²

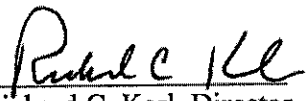
¹ Principal threat waste is a source material that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur.

² In September 2002, EPA issued a CERCLA Section 106 unilateral administrative order (UAO) requiring potentially responsible parties (PRPs) to install the Sauget Area 2 GMCS as an interim OU2 groundwater remedy for the Sauget Area 2 Site. This system is comprised of a 3,300 ft long "U"-shaped, fully penetrating barrier wall located downgradient of Sauget Area 2, Site R, and Sauget Area 1. The barrier wall extends from approximately 3 feet below ground surface to the top of bedrock and includes three groundwater extraction wells on the upgradient Sauget Area 2, OU 1 ROD

Additional principal threat PCB wastes have been observed at Site P, Q North, Q South, and R. The Selected Remedy addresses the areas on Sites P and Q South by treating the recovered NAPL, which includes PCBs, from Site P through off-Site incineration; and removal and off-Site treatment and disposal of intact drums of PCB waste located on Site Q South. The NAPL, which includes PCBs, identified on Site Q North and Site R are captured and treated by the Sauget Area 2 GMCS. The Selected Remedy for OU1 will treat the remaining principal threat wastes identified at the Site through off-Site incineration of the recovered NAPL from Site P and removal of intact drums from Site Q South.

To address the remaining low-level threat waste, which presents a direct contact exposure risk from soils and waste contaminated with PCBs, engineering controls³ in the form of engineered covers will be implemented. Engineered covers meeting the requirements of 35 IAC § 724 compliant caps will be installed over Sites O, O North, Q North, Q Central, Q South, R, and S; and 35 IAC § 807 caps will be installed over Site P.

The Selected Remedy is expected to achieve substantial and long-term risk reduction of PCBs through treatment. It is expected to prevent future exposure to currently contaminated soils and groundwater. It is expected to allow the property to be used for the reasonably anticipated future land use, which is industrial. Based on the information provided, the containment and treatment remedies for the Sauget Area 2 Sites O, P, Q, R, and S will ensure that the PCBs at Sauget Area 2 will not pose an unreasonable risk of injury to health or the environment.


Richard C. Karl, Director
Superfund Division
EPA Region 5

12-17-13
Date

side of the barrier wall. The GMCS intercepts and captures an estimated 210 million gallons of contaminated groundwater a year, which is pumped to the American Bottoms Regional Water Treatment Facility (ABRTF) in Sauget. The groundwater is treated at the ABRTF and ultimately discharged to the Mississippi River in compliance with the terms and conditions of the ABRTF's National Discharge Pollutant Discharge Elimination System (NPDES) permit issued under the Clean Water Act.

³ Engineering controls encompass a variety of engineered and constructed physical barriers (e.g., soil capping, sub-surface venting systems, mitigation barriers, fences) to contain and/or prevent exposure to contamination on a property.

APPENDIX G
STATE CONCURRENCE LETTER



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 • (217) 782-2829
PAT QUINN, GOVERNOR LISA BONNETT, DIRECTOR

217.785.7728

December 16, 2013

U.S. Environmental Protection Agency
Ms. Stephanie Linebaugh
Superfund Division, Mail Code: SRF-6J
77 West Jackson Boulevard
Chicago, Illinois 60604-3507

Re: Record of Decision for
Operable Unit 1, Sauget Area 2

1631215032 – St. Clair Co.
Sauget/Sauget Area 2
Superfund/Technical Reports

Dear Ms. Linebaugh,

The Illinois Environmental Protection Agency (Illinois EPA) is pleased to provide its concurrence with the Sauget Area 2, Operable Unit (OU) 1, Record of Decision (ROD). The Sauget Area 2 ROD selects Alternatives O2, P3, QN2, QC3, QS3, R2 and S3 from the Final Feasibility Study to address soils, sediment, surface water and groundwater source contamination at the Sauget Area 2 Sites. A second ROD to address area-wide groundwater contamination is anticipated. Please append Illinois EPA's Declaration to the final version of the ROD.

Should you have any question or require further assistance concerning this letter, do not hesitate to contact me at the number above or by e-mail at Paul.Lake@illinois.gov.

Sincerely,

Paul T. Lake, Remedial Project Manager
Federal Facilities Unit
Bureau of Land

PTL:rac/p/site files/FSRS/NPLU/Sauget/Area 2 Sites/IEPA SA2 OUI ROD Declaration Cover Ltr_121613.docx

Enclosure: Illinois EPA Declaration for the Sauget Area 2 ROD

Ms. Stephanie Linebaugh, USEPA
Sauget Area 2, OU1, ROD
Page 2 of 2

1631215032 - St. Clair Co.
Sauget Area 2
Superfund/Technical Reports

cc: Renee Snow, IAGO
Todd Rettig, IDNR
Annette Trowbridge, USFWS
Tom Martin, USEPA

DECLARATION FOR THE RECORD OF DECISION

Selected Remedy for the
Sauget Area 2 Proposed NPL Site – Operable Unit 1
Sauget and Cahokia, St. Clair County, Illinois

SITE NAME AND LOCATION

1631215032 – St. Clair County
Sauget Area 2 Proposed NPL Site – Operable Unit 1
CERCLIS Identification Number: ILD 000 605 790
Villages of Sauget and Cahokia, St. Clair County, Illinois

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial actions for the Operable Unit 1 of the Sauget Area 2 Site. The United States Environmental Protection Agency (USEPA), in consultation with the Illinois Environmental Protection Agency (Illinois EPA), is choosing these remedies in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA or Superfund) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP, 40 Code of Federal Regulations (CFR) 300-399). All decisions have been made based upon the Administrative Record for the Sauget Area 2 Site. This declaration indicates the State of Illinois' concurrence with the selection of Alternatives O2, P3, QN2, QC3, QS3, R2 and S3 from the Final Feasibility Study for Sauget Area 2.

ASSESSMENT OF THE SITE

The response actions selected in the Record of Decision (ROD) are necessary to protect the public health or welfare and the environment from the actual or threatened release of hazardous substances, pollutants or contaminants into the environment.

SIGNIFICANT CERCLA ACTIONS IN SAUGET AREA 2

USEPA, Illinois EPA and potentially responsible parties (PRPs) have implemented extensive clean-up activities in Sauget Area 2 already. These actions have addressed some of the more mobile and toxic contaminant source materials formerly present at the site. Removal actions conducted by USEPA at Site Q Central and Site Q South addressed principal threat wastes by excavating and disposing off-site approximately 3,271 drums and 14,000 tons of high-level polychlorinated biphenyl (PCB) contaminated soil. In 2002 USEPA also ordered the construction of a groundwater barrier wall and the installation of extraction wells, together called the Groundwater Migration and Control System (GMCS), next to the Mississippi River as an early interim groundwater (OU2) remedy.

The GMCS captures and treats area groundwater before it otherwise would be released to the River. The system is comprised of a 3,300 foot long "U" shaped, fully penetrating barrier wall

located downgradient of Site R, the former Clayton Chemical facility, Solutia's Krummrich plant and sites identified as part of Sauget Area 1. The barrier wall was installed beginning at a depth of about three feet below ground surface and is keyed into bedrock approximately 130 feet below ground surface. Three groundwater extraction wells located on the upgradient side of the wall intercept and capture an estimated 210 million gallons of contaminated groundwater a year. The contaminated water is pumped to the American Bottoms Regional Water Treatment Facility (ABRTF) in Sauget for treatment and ultimately is discharged to the Mississippi River in compliance with the ABRTF's National Discharge Pollutant Discharge Elimination System (NPDES) permit.

DESCRIPTION OF THE SELECTED REMEDY

The selected remedy will address contaminant source materials remaining at the site and will be the first of two remedial decisions and remedial actions for the Sauget Area 2 Site. The overall strategy for cleaning up the site is to first address soil, sediment, surface water, and groundwater source contamination through this remedial action for OU1. Area-wide groundwater contamination resulting from the contaminated soil and groundwater source areas in the Sauget Area 1 and Sauget Area 2 Sites will be addressed as a separate remedial action (OU2). The regional groundwater remedy will be selected in a separate groundwater ROD for both the Sauget Area 1 and Sauget Area 2 Superfund Sites.

The remedial action proposed in this ROD will be the final remedy for contaminated soils, sediments, surface water and groundwater at the Sauget Area 2 Site. Sauget Area 2 consists of five inactive disposal areas (Sites O, P, Q, R and S). Three of the disposal areas are closed landfills (Sites P, Q and R), one consists of four closed sludge lagoons (Site O) and one disposal area is an abandoned solvent reclamation facility (Site S). Collectively, the Sauget Area 2 disposal areas contain an estimated 4.5 million cubic yards of waste. U.S. EPA's selected remedy for OU1 at the Sauget Area 2 Site consists of the following alternatives:

- Site O and O North, Alternative O2: 35 IAC § 724 Compliant¹ Soil Cap Over Identified Waste Areas and Institutional and Access Controls;
- Site P, Alternative P3: Collection, Treatment, and Off-Site Disposal of Non-Aqueous Phase Liquid (NAPL) at Well (LEACH P-1), Asphalt Cap over Potentially Mobile Source Area (SA-P-3/AT-P-5), 35 IAC § 807 Solid Waste Landfill Cap Over Remainder of Identified Waste Areas, Vapor Intrusion Mitigation, and Institutional and Access Controls;
- Site Q North, Alternative QN2: 35 IAC § 724 Compliant Crushed Rock Cap Over Dogleg Area, Vapor Intrusion Mitigation, and Institutional and Access Controls;
- Site Q Central, Alternative QC3: In-Situ Soil Vapor Extraction (SVE) at Mobile Source Area (AT-Q32), 35 IAC § 724 Compliant Crushed Rock Cap Over Identified Waste Areas, Shoreline Erosion Protection, and Institutional and Access Controls;

¹ A 35 IAC § 724 compliant soil or crushed rock cap meets the performance standards of RCRA Subtitle C cap, except the component requiring long-term minimization of the migration of liquids. This component is not appropriate for the Sauget Area 2 Sites due to site-specific conditions including wastes materials located below the water table and the presence of the GMCS.

- Site Q South and Q South Ponds, Alternative QS3: Removal of Intact Drums at AT-Q35, 35 IAC § 724 Compliant Cap Over Identified Waste Areas, and Institutional and Access Controls;
- Site R, Alternative R2: 35 IAC § 724 Compliant Soil Cap Over Entire Site and Institutional and Access Controls; and,
- Site S, Alternative S3: In-Situ SVE at Mobile Source Area, 35 IAC § 724 Compliant Soil Cap Over Entire Site, and Institutional and Access Controls.

The selected alternatives for OU1 of Sauget Area 2 address additional principal threat wastes that are present at Sites P, Q South, Q North and R. Alternative P3 will collect NAPL identified in groundwater at Site P and treat it through off-site incineration. Alternative QS3 will remove, treat and dispose of intact drums located in Site Q South. The principal threat waste materials and NAPL identified at Sites Q North and R will continue to be captured by the GMCS and treated by the ABRTF.

To address the remaining low-level threat waste, engineered soil or crushed rock covers designed and managed to meet the relevant and appropriate State of Illinois hazardous waste landfill closure and post-closure requirements (35 IAC § 724.410) will be installed over Sites O, O North, Q North, Q Central, R, and S. A two-foot thick soil cap designed and managed to meet the applicable State of Illinois non-hazardous waste landfill closure and post-closure requirements (35 IAC § 807 Subparts C and E) will be installed over the previously permitted Site P. SVE will be used to collect and treat contaminants at Site Q Central and Site S. The need to address potential risks associated with vapor intrusion in re-developed areas of Sites P and Q North will be further evaluated, and, mitigated as necessary.

Active treatment and engineering controls will be augmented by the use of Institutional Controls (ICs) appropriate for the Sauget Area 2 Site and are a common element of each selected alternative. ICs are designed to control access to the site, manage construction or other intrusive activities that may disturb soil or waste, minimize potential exposure to contaminants of concern, and ensure that groundwater is not used for drinking water purposes.

At a minimum, ICs will be implemented in accordance with the Illinois Uniform Environmental Covenant Act to restrict residential development of the Sauget Area 2. Consistent with expectations set out in the Superfund regulations, the preferred alternatives do not rely exclusively on ICs to achieve protectiveness. A detailed description of the ICs for Sauget Area 2 will be developed in an Institutional Controls Implementation Plan to be prepared during the remedial design process.

As presented in the ROD Decision Summary, USEPA verified that all information necessary to comply with their ROD Data Certification Checklist is present in the document.

1990

STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to the remedial action, is cost-effective, and, utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

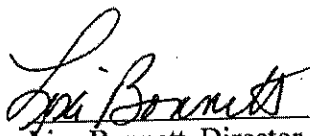
This remedy satisfies the statutory preference for treatment as a principal element of the remedy (i.e., reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment). The Selected Remedy calls for the treatment of NAPL through off-site incineration of the collected NAPL from Site P, the removal and off-site treatment and disposal of intact drums from Site Q South, and, the treatment of contaminants in-situ with SVE at Site Q Central and Site S. Additionally, NAPL identified at Site Q North and Site R will continue to be captured by the GMCS and treated by the ABRTF. The selected remedy provides a significant degree of treatment. Through modeled mass flux calculations it is estimated that the continued operation of the GMCS will treat between 15,000 kilograms (year 2020) and 10,000 kilograms (year 2038) of mobile contaminants per year. The SVE system installed at Site S is anticipated to recover and treat between 62,000 and 99,000 pounds of volatile organic contaminants.

Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of the remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

STATE CONCURRENCE

The State of Illinois concurs with the selection of Alternatives O2, P3, QN2, QC3, QS3, R2 and S3 from the Final Feasibility Study for Sauget Area 2. When USEPA receives the State's letter of concurrence, it will be attached to the ROD.

AUTHORIZING SIGNATURE



Lisa Bonnett, Director
Illinois Environmental Protection Agency

12/16/13
Date

Itemized Cost Summary

DEAD CREEK, IL, IL SITE ID = 05 60
SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
Operable Unit(s): NQ
SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
Site Expenditures From 09/30/2002 Through 03/31/2017

REGIONAL PAYROLL COSTS	\$110,760.92
ENFORCEMENT SUPPORT SERVICES (ESS) CONTRACT	
TOEROEK ASSOCIATES INC. (EPW10011)	\$17,333.02
INTERAGENCY AGREEMENT (IAG)	
U.S. DEPARTMENT OF JUSTICE (DOJREPORT)	\$222,012.42
EPA INDIRECT COSTS	\$220,999.17
Total Site Costs:	\$571,105.53

ENCLOSURE B

Regional Payroll Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Hours</u>	<u>Payroll Costs</u>
BENSING, MILAGROS	2008	22	1.00	49.90
ENVIRONMENTAL PROTECTION SPECIALIST		23	0.25	12.47
		26	0.50	24.96
		27	0.50	25.08
	2009	03	1.25	62.39
		04	1.00	49.91
		06	0.50	24.96
		08	1.25	64.95
		10	1.00	51.95
		11	2.00	103.92
		20	3.00	155.87
		21	1.50	77.93
		22	1.50	77.93
		23	1.00	51.95
		25	1.00	52.32
			17.25	\$886.49
CARLSON, JANET	2008	17	5.00	427.47
GENRAL ATTORNEY		20	0.50	42.76
			5.50	\$470.23
CO, GRACE	2009	02	24.00	1,080.30
ENFORCEMENT SPECIALIST		03	13.00	585.17
		04	17.00	765.22
		05	3.50	157.55
			57.50	\$2,588.24
EVISON, LEAH	2008	15	9.00	623.61
HAWORTH, LEAH A.		17	18.00	947.70
GEOLOGIST	2009	03	4.00	277.17
		09	4.00	288.67
		13	2.00	152.54
		14	4.00	305.09
		15	18.00	1,301.86

Regional Payroll Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58

Operable Unit(s): NQ

SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX

Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs

Site Expenditures From 09/30/2002 Through 03/31/2017

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Hours</u>	<u>Payroll Costs</u>
EVISON, LEAH	2009	17	2.00	144.33
		19	15.00	1,082.51
		26	21.00	1,515.51
		27	9.00	643.24
	2010	01	7.00	507.38
		02	5.00	360.85
			118.00	\$8,150.46
FELITTI, PETER	2008	21	0.75	65.30
GENERAL ATTORNEY	2009	16	0.25	22.69
			1.00	\$87.99
FIELD, RODGER	2003	14	1.50	90.34
SUPVY GENERAL ATTORNEY			1.50	\$90.34
FREY, BERTRAM	2007	10	0.50	39.83
SUPERVISORY GENERAL ATTORNEY	2008	13	0.25	20.41
		15	0.75	61.22
	2009	13	1.25	105.12
		17	0.50	42.05
			3.25	\$268.63
JONES, EVETTE	2008	11	15.00	933.15
BRYANT, EVETTE		12	7.00	435.46
INVESTIGATOR		13	8.00	497.68
		14	15.00	933.15
		16	24.00	1,493.05
		17	9.00	559.90
		18	8.00	497.69
		19	3.00	175.03
		21	14.00	870.95
		23	7.00	435.46
		26	20.00	1,244.22

Regional Payroll Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Hours</u>	<u>Payroll Costs</u>
JONES, EVETTE	2009	02	15.00	933.15
		03	18.50	1,150.89
		04	12.00	746.53
		05	20.00	1,244.22
		08	13.00	834.99
		09	21.00	1,348.81
		10	68.00	4,367.61
		11	46.00	2,954.56
		12	26.00	1,669.96
		13	37.00	2,399.62
		14	41.00	2,584.73
		15	43.00	2,815.62
		16	37.00	2,422.74
		17	21.00	1,090.74
		18	35.00	2,350.60
		19	46.00	3,089.37
		20	11.00	738.77
			640.50	\$40,818.65
JONES, TERESA	2008	19	1.00	56.03
ENV.PROTECTION SPECIALIST	2009	17	0.25	14.59
			1.25	\$70.62
KLASSMAN, DEBRA	2008	26	0.50	43.67
GENERAL ATTORNEY	2009	02	0.25	21.83
		03	0.25	21.83
		06	0.25	21.83
		08	0.50	42.28
			1.75	\$151.44
KLEBENOW, CHERYL	2009	13	0.25	9.11
SECRETARY (TYPING)			0.25	\$9.11

Regional Payroll Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ

SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Hours</u>	<u>Payroll Costs</u>
KYTE, LAWRENCE	2002	27	0.25	15.28
SUPERVISORY GENERAL ATTORNEY	2005	06	0.25	17.00
		09	0.50	35.33
		13	5.50	388.67
		14	0.50	35.33
	2006	27	0.25	18.75
	2007	01	0.25	18.76
		10	1.25	95.89
	2008	15	0.25	19.87
		19	1.25	99.34
	2009	03	1.00	81.51
		04	1.50	106.97
		05	0.25	20.38
		06	0.50	40.76
		08	0.25	18.35
		15	1.75	147.12
			15.50	\$1,159.31
LINEBAUGH, STEPHANIE	2015	04	11.00	800.10
BALL, STEPHANIE		05	11.50	811.85
Environmental Engineer (Rpm)		06	18.00	1,270.70
		14	1.50	113.05
	2016	13	5.50	423.63
			47.50	\$3,419.33
MARKS, THOMAS	2007	01	0.25	16.10
SUPV ENVIRONMENTAL PROTECTION SPEC		02	0.25	16.07
		05	4.25	273.54
	2008	13	2.00	136.43
		15	1.00	68.22
		16	2.00	136.26
		17	0.25	17.06
		19	0.25	17.06
		24	1.00	69.95

Regional Payroll Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Hours</u>	<u>Payroll Costs</u>
MARKS, THOMAS	2008	25	0.25	17.57
		27	0.50	34.92
	2009	01	1.25	87.48
		02	2.25	157.39
		03	1.25	87.42
		04	1.00	69.95
		05	1.00	69.95
		06	1.25	87.44
		09	1.50	109.29
		10	1.25	91.08
		11	1.25	91.08
		12	0.50	36.43
		13	1.25	91.08
		14	1.50	109.29
		19	1.75	127.50
		24	0.25	18.29
			29.25	\$2,036.85
MARTIN, THOMAS	2002	26	8.00	491.61
GENERAL ATTORNEY	2003	03	16.00	1,011.01
		04	36.00	2,274.77
		05	7.00	442.32
		07	2.00	132.88
		09	10.00	685.87
		10	2.00	137.17
		19	2.00	139.02
		21	5.00	347.56
	2004	24	3.00	208.54
		11	1.00	71.13
		16	3.00	237.56
		04	4.00	296.82
		05	2.00	148.41
		12	11.00	886.93
		20	24.00	1,935.02

Regional Payroll Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Hours</u>	<u>Payroll Costs</u>
MARTIN, THOMAS	2007	02	6.00	460.31
		03	5.00	383.60
		05	15.00	1,150.79
	2008	11	6.00	526.35
		12	5.00	438.63
		14	8.00	704.54
		16	6.00	526.35
		19	23.00	2,017.66
		21	2.00	175.45
		25	16.00	1,372.39
		26	14.00	1,168.78
		27	5.00	416.55
	2009	01	12.00	1,002.40
		02	19.00	1,586.17
		03	9.00	751.36
		06	11.00	887.76
		09	4.00	365.20
		11	14.50	1,323.52
		12	4.00	365.11
		13	11.00	1,004.05
		15	6.00	547.66
		18	11.00	1,003.87
		20	8.00	730.10
		21	2.00	182.52
	2010	26	57.00	4,951.55
		01	24.00	2,087.08
		02	32.00	2,779.81
		03	14.00	1,216.17
		05	11.00	923.79
		08	11.00	1,025.58
		09	18.00	1,678.21
		13	9.00	839.10
		16	8.00	745.87

Regional Payroll Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Hours</u>	<u>Payroll Costs</u>
MARTIN, THOMAS	2010	23	6.50	606.02
			549.00	\$45,390.92
NACHOWICZ, LINDA	2004	24	1.00	66.67
ENVIRONMENTAL SCIENTIST	2005	04	3.00	191.06
		09	2.00	143.24
		10	1.50	107.44
			7.50	\$508.41
NELSON, THOMAS	2007	22	0.25	21.23
SUPERVISORY GENERAL ATTORNEY		24	0.25	20.18
	2008	02	0.25	19.16
		15	0.75	64.16
	2010	09	0.50	47.06
		12	0.50	47.06
			2.50	\$218.85
PETERSON, STEVEN	2009	02	3.00	177.74
ENVIRONMENTAL SCIENTIST			3.00	\$177.74
RAFATI, MOHAMMAD	2008	20	2.50	128.36
ENV PROTECTION SPECIALIST		26	5.00	263.19
	2009	04	3.00	157.91
		14	2.00	109.83
		15	2.00	109.83
		16	4.00	219.63
		17	4.00	219.63
		18	1.00	54.91
		19	3.00	164.73
			26.50	\$1,428.02
RATLIFF, DENISE	2009	02	33.00	1,640.88

Regional Payroll Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Hours</u>	<u>Payroll Costs</u>
ENVIRONMENTAL SPECIALIST			33.00	\$1,640.88
SAUNDERS, VINCENT	2007	21	1.00	55.51
Supv Environmental Protection Specialist	2009	22	0.25	15.83
			1.25	\$71.34
SIDLO, JULIE	2010	05	0.25	15.28
THURBER, JULIE A.				
OPERATING ACCOUNTANT			0.25	\$15.28
STANUCH, TERENCE	2003	03	1.00	51.87
ATTORNEY-ADVISER		14	10.00	560.68
			11.00	\$612.55
TANAKA, JOAN	2014	14	0.25	22.61
ENVIRONMENTAL ENGINEER			0.25	\$22.61
TAYLOR, DARIUS	2015	06	7.00	435.21
FINANCIAL SPECIALIST		19	0.50	31.42
			7.50	\$466.63
Total Regional Payroll Costs			1,581.75	\$110,760.92

Headquarters Payroll Costs

DEAD CREEK, IL, IL SITE ID = 05 60

SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58

Operable Unit(s): NQ

SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX

Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs

Site Expenditures From 09/30/2002 Through 03/31/2017

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Hours</u>	<u>Payroll Costs</u>
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Regional Travel Costs

DEAD CREEK, IL, IL SITE ID = 05 60
SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
Operable Unit(s): NQ
SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
Site Expenditures From 09/30/2002 Through 03/31/2017

<u>Traveler/Vendor Name</u>	<u>Travel Number</u>	<u>Treasury Schedule</u>	<u>Treasury Schedule Date</u>	<u>Travel Costs</u>
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Headquarters Travel Costs

DEAD CREEK, IL, IL SITE ID = 05 60
SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
Operable Unit(s): NQ
SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
Site Expenditures From 09/30/2002 Through 03/31/2017

<u>Traveler/Vendor Name</u>	<u>Travel Number</u>	<u>Treasury Schedule</u>	<u>Treasury Schedule Date</u>	<u>Travel Costs</u>
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Contract Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

ENFORCEMENT SUPPORT SERVICES (ESS) CONTRACT

Contractor Name: TOEROEK ASSOCIATES INC.

EPA Contract Number: EPW10011

Delivery Order Information	<u>DO #</u>	<u>Start Date</u>	<u>End Date</u>
	1	05/25/2014	12/31/2014

Project Officer(s): QUIGLEY, EDWARD

Dates of Service: From: 05/25/2014 To: 12/31/2014

Summary of Service: ENFORCEMENT SUPPORT SERVICES

Total Costs: \$17,333.02

<u>Voucher Number</u>	<u>Voucher Date</u>	<u>Voucher Amount</u>	<u>Treasury Schedule Number and Date</u>	<u>Site Amount</u>	<u>Annual Allocation</u>
54	07/15/2014	31,243.78	AVC140256 08/07/2014	19.26	12.03
55	08/15/2014	32,866.13	AVC140311 09/09/2014	683.95	427.22
56	09/15/2014	46,569.83	AVC150003 10/03/2014	4,474.40	2,794.90
57	10/15/2014	39,560.72	AVC150024 11/03/2014	3,734.60	2,332.79
58	11/14/2014	42,482.96	AVC150046 12/04/2014	161.08	98.44
60	01/15/2015	28,598.10	AVC150086 02/02/2015	1,610.25	984.10
Total:				\$10,683.54	\$6,649.48

Contract Costs

DEAD CREEK, IL, IL SITE ID = 05 60
SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
Operable Unit(s): NQ
SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
Site Expenditures From 09/30/2002 Through 03/31/2017

ENFORCEMENT SUPPORT SERVICES (ESS) CONTRACT

Contractor Name: TOEROEK ASSOCIATES INC.

EPA Contract Number: EPW10011

Delivery Order Information	<u>DO #</u>	<u>Start Date</u>	<u>End Date</u>
	1	05/25/2014	12/31/2014

Project Officer(s): QUIGLEY, EDWARD

Dates of Service: From: 05/25/2014 To: 12/31/2014

Summary of Service: ENFORCEMENT SUPPORT SERVICES

Total Costs: \$17,333.02

<u>Voucher Number</u>	<u>Schedule Number</u>	<u>Rate Type</u>	<u>Annual Allocation Rate</u>
54	AVC140256	Provisional	0.624643
55	AVC140311	Provisional	0.624643
56	AVC150003	Provisional	0.624643
57	AVC150024	Provisional	0.624643
58	AVC150046	Provisional	0.611146
60	AVC150086	Provisional	0.611146

Contract Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

INTERAGENCY AGREEMENT (IAG)

Federal Agency: U.S. DEPARTMENT OF JUSTICE
 IAG Number: DOJREPORT
 Project Officer(s): MIKE ZOELLER, ATTORNEY
 MIKE ZOELLER, ATTORNEY, DEPARTMENT OF JUSTICE
 Dates of Service: From: 10/01/2004 To: 02/28/2017
 Summary of Service:
 Total Costs: \$222,012.42

Voucher Number	Voucher Date	Voucher Amount	Treasury Schedule Number and Date	Site Amount
90-11-2-6089/2-2006	09/30/2006	9,318.30	FY2006 09/30/2006	352.80
90-11-2-6089/2-2007	09/30/2007	21,857.09	FY2007 09/30/2007	21,857.09
90-11-2-6089/2-2008	09/30/2008	67,734.62	FY2008 09/30/2008	67,734.62
90-11-2-6089/2-2009	09/30/2009	14,893.74	FY2009 09/30/2009	14,886.09
90-11-2-6089/6-2014	11/03/2016	36,942.98	FY2014 09/30/2014	36,942.98
90-11-2-6089/6-2015	11/03/2016	44,067.97	FY2015 09/30/2015	44,067.97
90-11-2-6089/6-2016	11/03/2016	29,358.70	FY2016 08/31/2016	29,358.70
90-11-2-6089/6-2016	03/31/2017	3,524.33	FY2016 09/30/2016	3,524.33
90-11-2-6089/6-2017	03/31/2017	3,287.84	FY2017 02/28/2017	3,287.84
Total:				<u>\$222,012.42</u>

Financial Cost Summary for the Contract Lab Program

DEAD CREEK, IL, IL SITE ID = 05 60

SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58

Operable Unit(s): NQ

SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX

Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs

Site Expenditures From 09/30/2002 Through 03/31/2017

CONTRACT LAB PROGRAM (CLP) COSTS

Miscellaneous (MIS) Costs

DEAD CREEK, IL, IL SITE ID = 05 60

SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58

Operable Unit(s): NQ

SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX

Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs

Site Expenditures From 09/30/2002 Through 03/31/2017

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

<u>Fiscal Year</u>	<u>Direct Costs</u>	<u>Indirect Rate(%)</u>	<u>Indirect Costs</u>
2002	506.89	52.45%	265.86
2003	6,082.03	55.15%	3,354.25
2004	137.80	52.57%	72.44
2005	1,155.63	61.71%	713.13
2006	3,638.73	56.23%	2,046.05
2007	24,408.90	62.91%	15,355.64
2008	86,649.19	61.66%	53,427.87
2009	76,224.52	62.76%	47,838.44
2010	12,879.26	49.25%	6,343.05
2014	38,108.05	77.22%	29,427.04
2015	63,720.86	61.96%	39,481.45
2016	33,306.66	61.96%	20,636.80
2017	3,287.84	61.96%	2,037.15
	<u>350,106.36</u>		

Total EPA Indirect Costs

\$220,999.17

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

PAYROLL DIRECT COSTS

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Costs</u>	<u>Ind. Rate (%)</u>	<u>Indirect Costs</u>
KYTE, LAWRENCE	2002	27	15.28	52.45%	8.01
			15.28		\$8.01
MARTIN, THOMAS	2002	26	491.61	52.45%	257.85
			491.61		\$257.85
Total Fiscal Year 2002 Payroll Direct Costs:			506.89		\$265.86
Total Fiscal Year 2002:			506.89		\$265.86

PAYROLL DIRECT COSTS

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Costs</u>	<u>Ind. Rate (%)</u>	<u>Indirect Costs</u>
FIELD, RODGER	2003	14	90.34	55.15%	49.82
			90.34		\$49.82
MARTIN, THOMAS	2003	03	1,011.01	55.15%	557.57
		04	2,274.77	55.15%	1,254.54
		05	442.32	55.15%	243.94
		07	132.88	55.15%	73.28
		09	685.87	55.15%	378.26
		10	137.17	55.15%	75.65
		19	139.02	55.15%	76.67
		21	347.56	55.15%	191.68

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

PAYROLL DIRECT COSTS

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Costs</u>	<u>Ind. Rate (%)</u>	<u>Indirect Costs</u>
MARTIN, THOMAS	2003	24	208.54	55.15%	115.01
			5,379.14		\$2,966.60
STANUCH, TERENCE	2003	03	51.87	55.15%	28.61
		14	560.68	55.15%	309.22
			612.55		\$337.83
Total Fiscal Year 2003 Payroll Direct Costs:			6,082.03		\$3,354.25
Total Fiscal Year 2003:			6,082.03		\$3,354.25

PAYROLL DIRECT COSTS

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Costs</u>	<u>Ind. Rate (%)</u>	<u>Indirect Costs</u>
MARTIN, THOMAS	2004	11	71.13	52.57%	37.39
			71.13		\$37.39
NACHOWICZ, LINDA	2004	24	66.67	52.57%	35.05
			66.67		\$35.05
Total Fiscal Year 2004 Payroll Direct Costs:			137.80		\$72.44
Total Fiscal Year 2004:			137.80		\$72.44

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

PAYROLL DIRECT COSTS

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Costs</u>	<u>Ind. Rate (%)</u>	<u>Indirect Costs</u>
KYTE, LAWRENCE	2005	06	17.00	61.71%	10.49
		09	35.33	61.71%	21.80
		13	388.67	61.71%	239.85
		14	35.33	61.71%	21.80
			476.33		\$293.94
MARTIN, THOMAS	2005	16	237.56	61.71%	146.60
			237.56		\$146.60
NACHOWICZ, LINDA	2005	04	191.06	61.71%	117.90
		09	143.24	61.71%	88.39
		10	107.44	61.71%	66.30
			441.74		\$272.59
Total Fiscal Year 2005 Payroll Direct Costs:			1,155.63		\$713.13
Total Fiscal Year 2005:			1,155.63		\$713.13

PAYROLL DIRECT COSTS

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Costs</u>	<u>Ind. Rate (%)</u>	<u>Indirect Costs</u>
KYTE, LAWRENCE	2006	27	18.75	56.23%	10.54
			<u>18.75</u>		<u>\$10.54</u>
MARTIN, THOMAS	2006	04	296.82	56.23%	166.90

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

PAYROLL DIRECT COSTS

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Costs</u>	<u>Ind. Rate (%)</u>	<u>Indirect Costs</u>
MARTIN, THOMAS	2006	05	148.41	56.23%	83.45
		12	886.93	56.23%	498.72
		20	1,935.02	56.23%	1,088.06
			3,267.18		\$1,837.13
Total Fiscal Year 2006 Payroll Direct Costs:			3,285.93		\$1,847.67

OTHER DIRECT COSTS

Contract, IAG, SCA, Misc.NO	Voucher Number	Treasury Schedule Date	Site Amount	Annual/SMO Allocation Costs	Ind. Rate (%)	Indirect Costs
DOJREPORT	90-11-2-6089/2-2006	09/30/2006	352.80	0.00	56.23%	198.38
			352.80	0.00		\$198.38
Total Fiscal Year 2006 Other Direct Costs:			352.80	0.00		\$198.38
Total Fiscal Year 2006:			3,638.73			\$2,046.05

PAYROLL DIRECT COSTS

Employee Name	Fiscal Year	Pay Period	Payroll Costs	Ind. Rate (%)	Indirect Costs
FREY, BERTRAM	2007	10	39.83	62.91%	25.06
			39.83		\$25.06
KYTE, LAWRENCE	2007	01	18.76	62.91%	11.80

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

PAYROLL DIRECT COSTS

Employee Name	Fiscal Year	Pay Period	Payroll Costs	Ind. Rate (%)	Indirect Costs
KYTE, LAWRENCE	2007	10	95.89	62.91%	60.32
			114.65		\$72.12
MARKS, THOMAS	2007	01	16.10	62.91%	10.13
		02	16.07	62.91%	10.11
		05	273.54	62.91%	172.08
			305.71		\$192.32
MARTIN, THOMAS	2007	02	460.31	62.91%	289.58
		03	383.60	62.91%	241.32
		05	1,150.79	62.91%	723.96
			1,994.70		\$1,254.86
NELSON, THOMAS	2007	22	21.23	62.91%	13.36
		24	20.18	62.91%	12.70
			41.41		\$26.06
SAUNDERS, VINCENT	2007	21	55.51	62.91%	34.92
			55.51		\$34.92
Total Fiscal Year 2007 Payroll Direct Costs:			2,551.81		\$1,605.34

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

OTHER DIRECT COSTS

Contract, IAG, SCA, Misc.NO	Voucher Number	Treasury Schedule Date	Site Amount	Annual/SMO Allocation Costs	Ind. Rate (%)	Indirect Costs
DOJREPORT	90-11-2-6089/2-2007	09/30/2007	21,857.09	0.00	62.91%	13,750.30
			21,857.09	0.00		\$13,750.30
Total Fiscal Year 2007 Other Direct Costs:			21,857.09	0.00		\$13,750.30
Total Fiscal Year 2007:			24,408.90			\$15,355.64

PAYROLL DIRECT COSTS

Employee Name	Fiscal Year	Pay Period	Payroll Costs	Ind. Rate (%)	Indirect Costs
BENSING, MILAGROS	2008	22	49.90	61.66%	30.77
		23	12.47	61.66%	7.69
		26	24.96	61.66%	15.39
		27	25.08	61.66%	15.46
			112.41		\$69.31
CARLSON, JANET	2008	17	427.47	61.66%	263.58
		20	42.76	61.66%	26.37
			470.23		\$289.95
EVISON, LEAH	2008	15	623.61	61.66%	384.52
		17	947.70	61.66%	584.35
			1,571.31		\$968.87

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

PAYROLL DIRECT COSTS

Employee Name	Fiscal Year	Pay Period	Payroll Costs	Ind. Rate (%)	Indirect Costs
FELITTI, PETER	2008	21	65.30	61.66%	40.26
			65.30		\$40.26
FREY, BERTRAM	2008	13	20.41	61.66%	12.58
		15	61.22	61.66%	37.75
			81.63		\$50.33
JONES, EVETTE	2008	11	933.15	61.66%	575.38
		12	435.46	61.66%	268.50
		13	497.68	61.66%	306.87
		14	933.15	61.66%	575.38
		16	1,493.05	61.66%	920.61
		17	559.90	61.66%	345.23
		18	497.69	61.66%	306.88
		19	175.03	61.66%	107.92
		21	870.95	61.66%	537.03
		23	435.46	61.66%	268.50
		26	1,244.22	61.66%	767.19
			8,075.74		\$4,979.49
JONES, TERESA	2008	19	56.03	61.66%	34.55
			56.03		\$34.55
KLASSMAN, DEBRA	2008	26	43.67	61.66%	26.93
			43.67		\$26.93

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

PAYROLL DIRECT COSTS

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Costs</u>	<u>Ind. Rate (%)</u>	<u>Indirect Costs</u>
KYTE, LAWRENCE	2008	15	19.87	61.66%	12.25
		19	99.34	61.66%	61.25
			<u>119.21</u>		<u>\$73.50</u>
MARKS, THOMAS	2008	13	136.43	61.66%	84.12
		15	68.22	61.66%	42.06
		16	136.26	61.66%	84.02
		17	17.06	61.66%	10.52
		19	17.06	61.66%	10.52
		24	69.95	61.66%	43.13
		25	17.57	61.66%	10.83
		27	34.92	61.66%	21.53
			<u>497.47</u>		<u>\$306.73</u>
MARTIN, THOMAS	2008	11	526.35	61.66%	324.55
		12	438.63	61.66%	270.46
		14	704.54	61.66%	434.42
		16	526.35	61.66%	324.55
		19	877.24	61.66%	540.91
			1,140.42	61.66%	703.18
		21	175.45	61.66%	108.18
		25	857.74	61.66%	528.88
			514.65	61.66%	317.33
		26	417.42	61.66%	257.38
			751.36	61.66%	463.29
		27	249.93	61.66%	154.11

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

PAYROLL DIRECT COSTS

Employee Name	Fiscal Year	Pay Period	Payroll Costs	Ind. Rate (%)	Indirect Costs
MARTIN, THOMAS	2008	27	166.62	61.66%	102.74
			7,346.70		\$4,529.98
NELSON, THOMAS	2008	02	19.16	61.66%	11.81
		15	64.16	61.66%	39.56
			83.32		\$51.37
RAFATI, MOHAMMAD	2008	20	128.36	61.66%	79.15
		26	263.19	61.66%	162.28
			391.55		\$241.43
Total Fiscal Year 2008 Payroll Direct Costs:			18,914.57		\$11,662.70

OTHER DIRECT COSTS

Contract, IAG, SCA, Misc.NO	Voucher Number	Treasury Schedule Date	Site Amount	Annual/SMO Allocation Costs	Ind. Rate (%)	Indirect Costs
DOJREPORT	90-11-2-6089/2-2008	09/30/2008	67,734.62	0.00	61.66%	41,765.17
			67,734.62	0.00		\$41,765.17
Total Fiscal Year 2008 Other Direct Costs:			67,734.62	0.00		\$41,765.17
Total Fiscal Year 2008:			86,649.19			\$53,427.87

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

PAYROLL DIRECT COSTS

Employee Name	Fiscal Year	Pay Period	Payroll Costs	Ind. Rate (%)	Indirect Costs
BENSING, MILAGROS	2009	03	62.39	62.76%	39.16
		04	49.91	62.76%	31.32
		06	24.96	62.76%	15.66
		08	64.95	62.76%	40.76
		10	51.95	62.76%	32.60
		11	103.92	62.76%	65.22
		20	155.87	62.76%	97.82
		21	77.93	62.76%	48.91
		22	77.93	62.76%	48.91
		23	51.95	62.76%	32.60
		25	52.32	62.76%	32.84
			774.08		\$485.80
CO, GRACE	2009	02	1,080.30	62.76%	678.00
		03	585.17	62.76%	367.25
		04	765.22	62.76%	480.25
		05	157.55	62.76%	98.88
			2,588.24		\$1,624.38
EVISON, LEAH	2009	03	277.17	62.76%	173.95
		09	288.67	62.76%	181.17
		13	152.54	62.76%	95.73
		14	305.09	62.76%	191.47
		15	1,301.86	62.76%	817.05
		17	144.33	62.76%	90.58
		19	1,082.51	62.76%	679.38
		26	1,515.51	62.76%	951.13

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

PAYROLL DIRECT COSTS

Employee Name	Fiscal Year	Pay Period	Payroll Costs	Ind. Rate (%)	Indirect Costs
EVISON, LEAH	2009	27	643.24	62.76%	403.70
			5,710.92		\$3,584.16
FELITTI, PETER	2009	16	22.69	62.76%	14.24
			22.69		\$14.24
FREY, BERTRAM	2009	13	105.12	62.76%	65.97
		17	42.05	62.76%	26.39
			147.17		\$92.36
JONES, EVETTE	2009	02	933.15	62.76%	585.64
		03	1,150.89	62.76%	722.30
		04	746.53	62.76%	468.52
		05	1,244.22	62.76%	780.87
		08	834.99	62.76%	524.04
		09	1,348.81	62.76%	846.51
		10	4,367.61	62.76%	2,741.11
		11	2,954.56	62.76%	1,854.28
		12	1,669.96	62.76%	1,048.07
		13	2,399.62	62.76%	1,506.00
		14	2,584.73	62.76%	1,622.18
		15	2,815.62	62.76%	1,767.08
		16	2,422.74	62.76%	1,520.51
		17	1,090.74	62.76%	684.55
		18	2,350.60	62.76%	1,475.24
		19	3,089.37	62.76%	1,938.89

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

PAYROLL DIRECT COSTS

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Costs</u>	<u>Ind. Rate (%)</u>	<u>Indirect Costs</u>
JONES, EVETTE	2009	20	738.77	62.76%	463.65
			32,742.91		\$20,549.44
JONES, TERESA	2009	17	14.59	62.76%	9.16
			14.59		\$9.16
KLASSMAN, DEBRA	2009	02	21.83	62.76%	13.70
		03	21.83	62.76%	13.70
		06	21.83	62.76%	13.70
		08	42.28	62.76%	26.53
			107.77		\$67.63
KLEBENOW, CHERYL	2009	13	9.11	62.76%	5.72
			9.11		\$5.72
KYTE, LAWRENCE	2009	03	81.51	62.76%	51.16
		04	106.97	62.76%	67.13
		05	20.38	62.76%	12.79
		06	40.76	62.76%	25.58
		08	18.35	62.76%	11.52
		15	147.12	62.76%	92.33
			415.09		\$260.51
MARKS, THOMAS	2009	01	87.48	62.76%	54.90
		02	157.39	62.76%	98.78
		03	87.42	62.76%	54.86

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

PAYROLL DIRECT COSTS

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Costs</u>	<u>Ind. Rate (%)</u>	<u>Indirect Costs</u>
MARKS, THOMAS	2009	04	69.95	62.76%	43.90
		05	69.95	62.76%	43.90
		06	87.44	62.76%	54.88
		09	109.29	62.76%	68.59
		10	91.08	62.76%	57.16
		11	91.08	62.76%	57.16
		12	36.43	62.76%	22.86
		13	91.08	62.76%	57.16
		14	109.29	62.76%	68.59
		19	127.50	62.76%	80.02
		24	18.29	62.76%	11.48
			1,233.67		\$774.24
MARTIN, THOMAS	2009	01	584.73	62.76%	366.98
			417.67	62.76%	262.13
		02	1,085.27	62.76%	681.12
			500.90	62.76%	314.36
		03	751.36	62.76%	471.55
		06	887.76	62.76%	557.16
		09	365.20	62.76%	229.20
		11	1,323.52	62.76%	830.64
		12	365.11	62.76%	229.14
		13	1,004.05	62.76%	630.14
		15	547.66	62.76%	343.71
		18	1,003.87	62.76%	630.03
		20	730.10	62.76%	458.21
		21	182.52	62.76%	114.55

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

PAYROLL DIRECT COSTS

<u>Employee Name</u>	<u>Fiscal Year</u>	<u>Pay Period</u>	<u>Payroll Costs</u>	<u>Ind. Rate (%)</u>	<u>Indirect Costs</u>
MARTIN, THOMAS	2009	26	4,951.55	62.76%	3,107.59
			14,701.27		\$9,226.51
PETERSON, STEVEN	2009	02	177.74	62.76%	111.55
			177.74		\$111.55
RAFATI, MOHAMMAD	2009	04	157.91	62.76%	99.10
		14	109.83	62.76%	68.93
		15	109.83	62.76%	68.93
		16	219.63	62.76%	137.84
		17	219.63	62.76%	137.84
		18	54.91	62.76%	34.46
		19	164.73	62.76%	103.38
			1,036.47		\$650.48
RATLIFF, DENISE	2009	02	596.68	62.76%	374.48
			1,044.20	62.76%	655.34
			1,640.88		\$1,029.82
SAUNDERS, VINCENT	2009	22	15.83	62.76%	9.93
			15.83		\$9.93
Total Fiscal Year 2009 Payroll Direct Costs:			61,338.43		\$38,495.93

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

OTHER DIRECT COSTS

Contract, IAG, SCA, Misc.NO	Voucher Number	Treasury Schedule Date	Site Amount	Annual/SMO Allocation Costs	Ind. Rate (%)	Indirect Costs
DOJREPORT	90-11-2-6089/2-2009	09/30/2009	14,886.09	0.00	62.76%	9,342.51
			14,886.09	0.00		\$9,342.51
Total Fiscal Year 2009 Other Direct Costs:			14,886.09	0.00		\$9,342.51
Total Fiscal Year 2009:			76,224.52			\$47,838.44

PAYROLL DIRECT COSTS

Employee Name	Fiscal Year	Pay Period	Payroll Costs	Ind. Rate (%)	Indirect Costs
EVISON, LEAH	2010	01	507.38	49.25%	249.88
		02	360.85	49.25%	177.72
			868.23		\$427.60
MARTIN, THOMAS	2010	01	2,087.08	49.25%	1,027.89
		02	2,779.81	49.25%	1,369.06
		03	1,216.17	49.25%	598.96
		05	923.79	49.25%	454.97
		08	1,025.58	49.25%	505.10
		09	1,678.21	49.25%	826.52
		13	839.10	49.25%	413.26
		16	745.87	49.25%	367.34
		23	606.02	49.25%	298.46
			11,901.63		\$5,861.56
NELSON, THOMAS	2010	09	47.06	49.25%	23.18

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

PAYROLL DIRECT COSTS

Employee Name	Fiscal Year	Pay Period	Payroll Costs	Ind. Rate (%)	Indirect Costs
NELSON, THOMAS	2010	12	47.06	49.25%	23.18
			94.12		\$46.36
SIDLO, JULIE	2010	05	15.28	49.25%	7.53
			15.28		\$7.53
Total Fiscal Year 2010 Payroll Direct Costs:			12,879.26		\$6,343.05
Total Fiscal Year 2010:			12,879.26		\$6,343.05

PAYROLL DIRECT COSTS

Employee Name	Fiscal Year	Pay Period	Payroll Costs	Ind. Rate (%)	Indirect Costs
TANAKA, JOAN	2014	14	22.61	77.22%	17.46
			22.61		\$17.46
Total Fiscal Year 2014 Payroll Direct Costs:			22.61		\$17.46

OTHER DIRECT COSTS

Contract, IAG, SCA, Misc.NO	Voucher Number	Treasury Schedule Date	Site Amount	Annual/SMO Allocation Costs	Ind. Rate (%)	Indirect Costs
DOJREPORT	90-11-2-6089/6-2014	09/30/2014	36,942.98	0.00	77.22%	28,527.37
			36,942.98	0.00		\$28,527.37

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

OTHER DIRECT COSTS

Contract, IAG, SCA, Misc.NO	Voucher Number	Treasury Schedule Date	Site Amount	Annual/SMO Allocation Costs	Ind. Rate (%)	Indirect Costs
EPW10011	54	08/07/2014	19.26	12.03	77.22%	24.16
	55	09/09/2014	683.95	427.22	77.22%	858.05
			703.21	439.25		\$882.21
Total Fiscal Year 2014 Other Direct Costs:			37,646.19	439.25		\$29,409.58
Total Fiscal Year 2014:			38,108.05			\$29,427.04

PAYROLL DIRECT COSTS

Employee Name	Fiscal Year	Pay Period	Payroll Costs	Ind. Rate (%)	Indirect Costs
LINEBAUGH, STEPHANIE	2015	04	800.10	61.96%	495.74
		05	811.85	61.96%	503.02
		06	1,270.70	61.96%	787.33
		14	113.05	61.96%	70.05
			2,995.70		\$1,856.14
TAYLOR, DARIUS	2015	06	435.21	61.96%	269.66
		19	31.42	61.96%	19.47
			466.63		\$289.13
Total Fiscal Year 2015 Payroll Direct Costs:			3,462.33		\$2,145.27

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

OTHER DIRECT COSTS

Contract, IAG, SCA, Misc.NO	Voucher Number	Treasury Schedule Date	Site Amount	Annual/SMO Allocation Costs	Ind. Rate (%)	Indirect Costs
DOJREPORT	90-11-2-6089/6-2015	09/30/2015	44,067.97	0.00	61.96%	27,304.51
			44,067.97	0.00		\$27,304.51
EPW10011	56	10/03/2014	4,474.40	2,794.90	61.96%	4,504.06
	57	11/03/2014	3,734.60	2,332.79	61.96%	3,759.35
	58	12/04/2014	161.08	98.44	61.96%	160.80
	60	02/02/2015	1,610.25	984.10	61.96%	1,607.46
			9,980.33	6,210.23		\$10,031.67
Total Fiscal Year 2015 Other Direct Costs:			54,048.30	6,210.23		\$37,336.18
Total Fiscal Year 2015:			63,720.86			\$39,481.45

PAYROLL DIRECT COSTS

Employee Name	Fiscal Year	Pay Period	Payroll Costs	Ind. Rate (%)	Indirect Costs
LINEBAUGH, STEPHANIE	2016	13	423.63	61.96%	262.48
			423.63		\$262.48
Total Fiscal Year 2016 Payroll Direct Costs:			423.63		\$262.48

OTHER DIRECT COSTS

Contract, IAG, SCA, Misc.NO	Voucher Number	Treasury Schedule Date	Site Amount	Annual/SMO Allocation Costs	Ind. Rate (%)	Indirect Costs
DOJREPORT	90-11-2-6089/6-2016	08/31/2016	29,358.70	0.00	61.96%	18,190.65

EPA Indirect Costs

DEAD CREEK, IL, IL SITE ID = 05 60
 SAUGET TOXIC DUMP, SAUGET, IL SITE ID = 05 58
 Operable Unit(s): NQ
 SAUGET AREA 2, SAUGET, IL SITE ID = 05 XX
 Operable Unit(s): NQ

Sauget Area 2 Non-Site Q, Non-UAO, Non-AOC & Non-Listing Costs
 Site Expenditures From 09/30/2002 Through 03/31/2017

OTHER DIRECT COSTS

Contract, IAG, SCA, Misc.NO	Voucher Number	Treasury Schedule Date	Site Amount	Annual/SMO Allocation Costs	Ind. Rate (%)	Indirect Costs
DOJREPORT	90-11-2-6089/6-2016	09/30/2016	3,524.33	0.00	61.96%	2,183.67
			32,883.03	0.00		\$20,374.32
Total Fiscal Year 2016 Other Direct Costs:			32,883.03	0.00		\$20,374.32
Total Fiscal Year 2016:			33,306.66			\$20,636.80

OTHER DIRECT COSTS

Contract, IAG, SCA, Misc.NO	Voucher Number	Treasury Schedule Date	Site Amount	Annual/SMO Allocation Costs	Ind. Rate (%)	Indirect Costs
DOJREPORT	90-11-2-6089/6-2017	02/28/2017	3,287.84	0.00	61.96%	2,037.15
			3,287.84	0.00		\$2,037.15
Total Fiscal Year 2017 Other Direct Costs:			3,287.84	0.00		\$2,037.15
Total Fiscal Year 2017:			3,287.84			\$2,037.15
Total EPA Indirect Costs						\$220,999.17

REMEDIAL DESIGN/REMEDIAL ACTION
STATEMENT OF WORK
OPERABLE UNIT 1
SAUGET AREA 2 SUPERFUND SITE
Sauget and Cahokia, St. Clair County, State of Illinois
EPA Region 5

June 2017

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Enclosure C

1. INTRODUCTION

1.1 Purpose of the SOW. This Statement of Work (SOW) sets forth the procedures and requirements for implementing the Work.

1.2 Structure of the SOW.

- Section 2 (Community Involvement) sets forth EPA's and Settling Defendants' (SDs') responsibilities for community involvement.
- Section 3 (Remedial Design) sets forth the process for developing the Remedial Design (RD), which includes the submission of specified primary deliverables.
- Section 4 (Remedial Action) sets forth requirements regarding the completion of the Remedial Action (RA), including primary deliverables related to completion of the RA.
- Section 5 (Reporting) sets forth SDs' reporting obligations.
- Section 6 (Deliverables) describes the content of the supporting deliverables and the general requirements regarding SDs' submission of, and EPA's review of, approval of, comment on, and/or modification of, the deliverables.
- Section 7 (Schedules) sets forth the schedule for submitting the primary deliverables, specifies the supporting deliverables that must accompany each primary deliverable, and sets forth the schedule of milestones regarding the completion of the RA.
- Section 8 (State Participation) addresses State participation, and
- Section 9 (References) provides a list of references, including URLs.

1.3 The Scope of the Remedy includes the actions described in Section 2.12 of the ROD, including the following.

Sauget Area 2 consists of five inactive disposal areas (Sites O, P, Q, R, and S). Of these disposal sites, three are closed landfills (Sites P, Q, and R), one consists of four closed sludge lagoons (Site O), and one is a waste disposal site (Site S) associated with an abandoned solvent reclamation facility.

This SOW directs implementation of the Selected Remedy for Operable Unit 1 (OU1) of Sauget Area 2. The SDs shall implement the Selected Remedy, which includes actions that address contaminated soils, sediments, surface water, and groundwater contamination source areas at the Sauget Area 2 Site, e.g., OU1.

The Selected Remedy for OU1 of the Sauget Area 2 Site, in addition to the continued operation of the existing groundwater barrier wall and extraction system (described below), includes but is not limited to, the components listed below:

- Selected Alternative for Site O and O North: Alternative O2: 35 IAC § 724 Compliant¹ Soil Cap Over Identified Waste Areas and Institutional and Access Controls;
- Selected Alternative for Site P: Alternative P3: Collection, Treatment, and Off-Site Disposal of NAPL at Well (LEACH P-1), Asphalt Cap over Potentially Mobile Source Area (SA-P-3/AT-P-5), 35 IAC § 807 Solid Waste Landfill Cap Over Remainder of Identified Waste Areas, Vapor Intrusion Mitigation, and Institutional and Access Controls;
- Selected Alternative for Site Q North: Alternative QN2: 35 IAC § 724 Compliant Crushed Rock Cap Over Dogleg Area, Vapor Intrusion Mitigation, and Institutional and Access Controls;
- Selected Alternative for Site Q Central: Alternative QC3: In-Situ Soil Vapor Extraction (SVE) at Potentially Mobile Source Area (AT-Q32), 35 IAC § 724 Compliant Crushed Rock Cap Over Identified Waste Areas, Shoreline Erosion Protection, and Institutional and Access Controls;
- Selected Alternative for Site Q South and Q South Ponds: Alternative QS3: Removal of Intact Drums at AT-Q35, 35 IAC § 724 Compliant Cap Over Identified Waste Areas, and Institutional and Access Controls;
- Selected Alternative for Site R: Alternative R2: 35 IAC § 724 Compliant Soil Cap Over Entire Site and Institutional and Access Controls; and
- Selected Alternative for Site S: Alternative S3: In-Situ SVE of Potentially Mobile Source Area, 35 IAC § 724 Compliant Soil Cap Over Entire Site, and Institutional and Access Controls.

In September 2002, EPA issued a Unilateral Administrative Order (UAO) calling for the construction of a groundwater barrier wall and extraction system in Sauget Area 2 (referred to as the Groundwater Migration and Control System (GMCS)), next to the Mississippi River as an early interim Sauget Area 2 OU2 groundwater remedy to capture and treat area groundwater before it releases to the River². The September 2002 UAO is

¹ A 35 IAC § 724 compliant soil or crushed rock cap meets the performance standards of a RCRA subtitle C cap, except the component requiring long-term minimization of migration of liquids. This component is not appropriate for the Sauget Area 2 Sites due to Site-specific conditions.

² In September 2002, EPA issued a CERCLA Section 106 unilateral administrative order (UAO) requiring potentially responsible parties (PRPs) to install the Sauget Area 2 GMCS as an interim OU2 groundwater remedy for the Sauget Area 2 Site. This system is comprised of a 3,300 ft. long “U”-shaped, fully penetrating barrier wall located downgradient of Site R, Sauget Area 2, the former Clayton Chemical facility, Solutia’s Krummrich plant as well as other facilities, and Sauget Area 1. The barrier wall extends from approximately 3 feet below ground surface down to the top of bedrock and includes three groundwater extraction wells on the upgradient side of the wall. The GMCS intercepts and captures an estimated 210 million gallons of contaminated groundwater a year, which is pumped to the American Bottoms Regional Water Treatment Facility (ABRTF) in Sauget. The groundwater is treated at the ABRTF and ultimately discharged to the Mississippi River in compliance with the terms and

fully incorporated into this Sauget Area 2 OU 1 RD/RA Consent Decree and SOW, and the SDs shall continue to implement the terms of September 2002 UAO under this Consent Decree and SOW.

- 1.4 The terms used in this SOW that are defined in CERCLA, in regulations promulgated under CERCLA, or in the Consent Decree (CD), have the meanings assigned to them in CERCLA, in such regulations, or in the CD, except that the term "Paragraph" or "¶" means a paragraph of the SOW, unless otherwise stated.

2. COMMUNITY INVOLVEMENT

2.1 Community Involvement Responsibilities

- (a) EPA has the lead responsibility for developing and implementing community involvement activities at the Site. Previously during the Remedial Investigation/Feasibility Study (RI/FS) phase, EPA developed a Community Involvement Plan (CIP) for the Site. Pursuant to 40 C.F.R. § 300.435(c), EPA shall review the existing CIP and determine whether it should be revised to describe further public involvement activities during the Work that are not already addressed or provided for in the existing CIP, including, if applicable, any Technical Assistance Grant (TAG), any use of the Technical Assistance Services for Communities (TASC) contract, and/or any Technical Assistance Plan (TAP).
- (b) If requested by EPA, SDs shall support EPA's community involvement activities. This may include providing online access to initial submissions and updates of deliverables to (1) Community Advisory Groups, (2) Technical Assistance Grant recipients and their advisors, and (3) other entities to provide them with a reasonable opportunity for review and comment. EPA may describe in its CIP SDs' responsibilities for community involvement activities. All community involvement activities conducted by SDs at EPA's request are subject to EPA's oversight.
- (c) **SDs' CI Coordinator.** If requested by EPA, SDs shall, within 15 days, designate and notify EPA of SDs' Community Involvement Coordinator (SDs' CI Coordinator). SDs may hire a contractor for this purpose. SDs' notice must include the name, title, and qualifications of the SDs' CI Coordinator. SDs' CI Coordinator is responsible for providing support regarding EPA's community involvement activities, including coordinating with EPA's CI Coordinator regarding responses to the public's inquiries about the Site.

2.2 SDs' Responsibilities for Technical Assistance

conditions of the ABRTF's National Discharge Pollutant Discharge Elimination System (NPDES) permit issued under the Clean Water Act.

- (a) If EPA requests, SDs shall arrange for a qualified community group to receive the services of a technical advisor(s) who can: (i) help group members understand Site cleanup issues (specifically, to interpret and comment on Site-related documents developed under this SOW); and (ii) share this information with others in the community. The technical advisor(s) will be independent from the SDs. SDs' TAP assistance will be limited to \$50,000, except as provided in ¶ 2.2(d)(3), and will end when EPA issues the Certification of Work Completion under ¶ 4.7. SDs shall implement this requirement under a Technical Assistance Plan (TAP).
- (b) If EPA requests, SDs shall cooperate with EPA in soliciting interest from community groups regarding a TAP at the Site. If more than one community group expresses an interest in a TAP, SDs shall cooperate with EPA in encouraging the groups to submit a single, joint application for a TAP.
- (c) If EPA requests, SDs shall, within 30 days, submit a proposed TAP for EPA approval. The TAP must describe the SDs' plans for the qualified community group to receive independent technical assistance. The TAP must include the following elements:
 - (1) For SDs to arrange for publication of a notice in local media that they have received a Letter of Intent (LOI) to submit an application for a TAP. The notice should explain how other interested groups may also try to combine efforts with the LOI group or submit their own applications, by a reasonable specified deadline;
 - (2) For SDs to review the application(s) received and determine the eligibility of the community group(s). The proposed TAP must include eligibility criteria as follows:
 - (i) A community group is eligible if it is: (a) comprised of people who are affected by the release or threatened release at the Site, and (b) able to demonstrate its ability to adequately and responsibly manage TAP-related responsibilities.
 - (ii) A community group is ineligible if it is: (a) a potentially responsible party (PRP) at the Site, represents such a PRP, or receives money or services from a PRP (other than through the TAP); (b) affiliated with a national organization; (c) an academic institution; (d) a political subdivision; (e) a tribal government; (f) a group established or presently sustained by any of the above ineligible entities; or (g) a group in which any of the above ineligible entities is represented.
 - (3) For SDs to notify EPA of their determination on eligibility of the applicant group(s) to ensure that the determination is consistent with the SOW before notifying the group(s);

- (4) If more than one community group submits a timely application, for SDs to review each application and evaluate each application based on the following elements:
 - (i) The extent to which the group is representative of those persons affected by the Site; and
 - (ii) The effectiveness of the group's proposed system for managing TAP-related responsibilities, including its plans for working with its technical advisor and for sharing Site-related information with other members of the community.
 - (5) For SDs to document their evaluation of, and their selection of, a qualified community group, and to brief EPA regarding their evaluation process and choice. EPA may review SDs' evaluation process to determine whether the process satisfactorily follows the criteria in ¶ 2.2(c)(4). TAP assistance may be awarded to only one qualified group at a time;
 - (6) For SDs to notify all applicant(s) about SDs' decision;
 - (7) For SDs to designate a person (TAP Coordinator) to be their primary contact with the selected community group;
 - (8) A description of SDs' plans to implement the requirements of ¶ 2.2(d) (Agreement with Selected Community Group); and
 - (9) For SDs to submit quarterly progress reports regarding the implementation of the TAP.
- (d) **Agreement with Selected Community Group**
- (1) SDs shall negotiate an agreement with the selected community group that specifies the duties of SDs and the community group. The agreement must specify the activities that may be reimbursed under the TAP and the activities that may not be reimbursed under the TAP. The list of allowable activities must be consistent with 40 C.F.R. § 35.4070 (e.g., obtaining the services of an advisor to help the group understand the nature of the environmental and public health hazards at the Site and the various stages of the response action, and communicating Site information to others in the community). The list of non-allowable activities must be consistent with 40 C.F.R. § 35.4075 (e.g., activities related to litigation or political lobbying).
 - (2) The agreement must provide that SDs' review of the Community Group's recommended choice for Technical Advisor will be limited, consistent with 40 C.F.R. §§ 35.4190 and 35.4195, to criteria such as whether the advisor has relevant knowledge, academic training, and relevant

experience as well as the ability to translate technical information into terms the community can understand.

- (3) The agreement must provide that the Community Group is eligible for additional TAP assistance, if it can demonstrate that it has effectively managed its TAP responsibilities to date, and that at least three of the following 10 factors are satisfied:
 - (i) EPA expects that more than eight years (beginning with the initiation of the RI/FS) will pass before construction completion will be achieved;
 - (ii) EPA requires treatability studies or evaluation of new and innovative technologies;
 - (iii) EPA reopens the ROD;
 - (iv) The public health assessment (or related activities) for the Site indicates the need for further health investigations and/or health-related activities;
 - (v) After SDs' selection of the Community Group for the TAP, EPA designates additional operable units at the Site;
 - (vi) EPA issues an Explanation of Significant Differences for the ROD;
 - (vii) After SDs' selection of the Community Group, a legislative or regulatory change results in significant new Site information;
 - (viii) Significant public concern about the Site exists, as evidenced, e.g., by relatively large turnout at meetings, the need for multiple meetings, the need for numerous copies of documents to inform community members, etc.;
 - (ix) Any other factor that, in EPA's judgment, indicates that the Site is unusually complex; or
 - (x) An RI/FS costing at least \$2 million was performed at the Site.
- (4) SDs are entitled to retain any unobligated TAP funds upon EPA's Certification of Work Completion under ¶ 4.7.
- (5) SDs shall submit a draft of the proposed agreement to EPA for its comments.

3. REMEDIAL DESIGN

3.1 RD Work Plan. SDs shall submit a Remedial Design Work Plan (RDWP) for EPA approval. The RDWP must include:

- (a) Plans for implementing all RD activities identified in this SOW, in the RDWP, or required by EPA to be conducted to develop the RD;
- (b) A description of the overall management strategy for performing the RD, including a proposal for phasing of design and construction, if applicable;
- (c) A description of the proposed general approach to contracting, construction, operation, maintenance, and monitoring of the RA as necessary to implement the Work;
- (d) A description of the responsibility and authority of all organizations and key personnel involved with the development of the RD;
- (e) Descriptions of any areas requiring clarification and/or anticipated problems (e.g., data gaps);
- (f) Description of any proposed pre-design investigation;
- (g) Description of any proposed treatability study;
- (h) Descriptions of any applicable permitting requirements and other regulatory requirements;
- (i) Description of plans for obtaining access in connection with the Work, such as property acquisition, property leases, and/or easements; and
- (j) All supporting deliverables required to accompany the RDWP as specified in the RD Schedule set forth in ¶ 7.2 ("RD Schedule") and described in ¶ 6.7 (Supporting Deliverables).

3.2 SDs shall meet regularly with EPA to discuss design issues as necessary, as directed or determined by EPA.

3.3 Pre-Design Investigation. The purpose of the Pre-Design Investigation (PDI) is to address data gaps by conducting additional field investigations.

- (a) **PDI Work Plan.** If EPA requests, SDs shall submit a PDI Work Plan (PDIWP) for EPA approval. The PDIWP must include:
 - (1) An evaluation and summary of existing data and description of data gaps;
 - (2) A sampling plan including media to be sampled, contaminants or parameters for which sampling will be conducted, location (areal extent and depths), and number of samples; and

- (3) Cross references to QA/QC requirements set forth in the QAPP as described in ¶ 6.7(d).
- (b) Following the PDI, SDs shall submit a PDI Evaluation Report. This report must include:
 - (1) Summary of the investigations performed;
 - (2) Summary of investigation results;
 - (3) Summary of validated data (i.e., tables and graphics);
 - (4) Data validation reports and laboratory data reports;
 - (5) Narrative interpretation of data and results;
 - (6) Results of statistical and modeling analyses;
 - (7) Photographs documenting the work conducted; and
 - (8) Conclusions and recommendations for RD, including design parameters and criteria.
- (c) EPA may require SDs to supplement the PDI Evaluation Report and/or to perform additional pre-design studies.

3.4 Preliminary (30%) RD. SDs shall submit a Preliminary (30%) RD for EPA's comment. The Preliminary RD must include:

- (a) A design criteria report, as described in the *Remedial Design/Remedial Action Handbook*, EPA 540/R-95/059 (June 1995);
- (b) Preliminary drawings and specifications;
- (c) Descriptions of permit requirements, if applicable;
- (d) Preliminary Operation and Maintenance (O&M) Plan and O&M Manual;
- (e) A description of how the RA will be implemented in a manner that minimizes environmental impacts in accordance with EPA's *Principles for Greener Cleanups* (Aug. 2009);
- (f) A description of monitoring and control measures to protect human health and the environment, such as air monitoring and dust suppression, during the RA;
- (g) Any proposed revisions to the RA Schedule that is set forth in ¶ 7.3 (RA Schedule); and

- (h) All supporting deliverables required to accompany the Preliminary RD as specified in the RD Schedule set forth in ¶ 7.2 (RD Schedule) and described in ¶ 6.7 (Supporting Deliverables).

3.5 Pre-Final (95%) RD. SDs shall submit the Pre-final (95%) RD for EPA's comment. The Pre-final RD must be a continuation and expansion of the previous design submittal and must address EPA's comments regarding the Preliminary RD. The Pre-final RD will serve as the approved Final (100%) RD if EPA approves the Pre-final RD without comments. The Pre-final RD must include:

- (a) A complete set of construction drawings and specifications that are: (1) certified by a registered professional engineer; (2) suitable for procurement; and (3) follow the Construction Specifications Institute's MasterFormat 2012;
- (b) A survey and engineering drawings showing existing Site features, such as elements, property borders, easements, and Site conditions;
- (c) Pre-Final versions of the same elements and deliverables as are required for the Preliminary RD;
- (d) A specification for photographic documentation of the RA; and
- (e) Supporting deliverables as specified in the RD Schedule.

3.6 Final (100%) RD. SDs shall submit the Final (100%) RD for EPA approval. The Final RD must address EPA's comments on the Pre-final RD and must include final versions of all Pre-final RD deliverables.

4. REMEDIAL ACTION

4.1 RA Work Plan. SDs shall submit an RA Work Plan (RAWP) for EPA approval that includes:

- (a) A proposed RA Construction Schedule in a Gantt chart;
- (b) An updated health and safety plan that covers activities during the RA; and
- (c) If applicable: Plans for satisfying permitting requirements, including obtaining permits for off-site activity and for satisfying substantive requirements of permits for on-site activity.

4.2 Meetings and Inspections

- (a) **Preconstruction Conference.** SDs shall hold a preconstruction conference with EPA and others as directed or approved by EPA and as described in the *Remedial Design/Remedial Action Handbook*, EPA 540/R-95/059 (June 1995). SDs shall prepare minutes of the conference and shall distribute the minutes to all Parties.

- (b) **Periodic Meetings.** During the construction portion of the RA (RA Construction), SDs shall meet regularly with EPA, and others as directed or determined by EPA, to discuss construction issues. SDs shall distribute an agenda and list of attendees to all Parties prior to each meeting. SDs shall prepare minutes of the meetings and shall distribute the minutes to all Parties.
- (c) **Inspections**
 - (1) EPA shall conduct periodic inspections of the Work. At EPA's request, the Supervising Contractor or other designee shall accompany EPA during inspections.
 - (2) If requested: SDs shall provide personal protective equipment needed for EPA personnel and any oversight officials to perform their oversight duties.
 - (3) Upon notification by EPA of any deficiencies in the RA Construction, SDs shall take all necessary steps to correct the deficiencies and/or bring the RA Construction into compliance with the approved Final RD, any approved design changes, and/or the approved RAWP. If applicable, SDs shall comply with any schedule provided by EPA in its notice of deficiency.

4.3 Emergency Response and Reporting

- (a) **Emergency Response and Reporting.** If any event occurs during performance of the Work that causes or threatens to cause a release of Waste Material on, at, or from the Site and that either constitutes an emergency situation or that may present an immediate threat to public health or welfare or the environment, SDs shall: (1) immediately take all appropriate action to prevent, abate, or minimize such release or threat of release; (2) immediately notify the authorized EPA officer (as specified in ¶ 4.3(c)) orally; and (3) take such actions in consultation with the authorized EPA officer and in accordance with all applicable provisions of the Health and Safety Plan, the Emergency Response Plan, and any other deliverable approved by EPA under the SOW.
- (b) **Release Reporting.** Upon the occurrence of any event during performance of the Work that SDs are required to report pursuant to Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-know Act (EPCRA), 42 U.S.C. § 11004, SDs shall immediately notify the authorized EPA officer orally.
- (c) The "authorized EPA officer" for purposes of immediate oral notifications and consultations under ¶ 4.3(a) and ¶ 4.3(b) is the EPA Project Coordinator, the EPA Alternate Project Coordinator (if the EPA Project Coordinator is unavailable), or the EPA Emergency Response Branch, Region 5 (if neither EPA Project Coordinator is available).

- (d) For any event covered by ¶ 4.3(a) and ¶ 4.3(b), SDs shall: (1) within 14 days after the onset of such event, submit a report to EPA describing the actions or events that occurred and the measures taken, and to be taken, in response thereto; and (2) within 30 days after the conclusion of such event, submit a report to EPA describing all actions taken in response to such event.
- (e) The reporting requirements under ¶ 4.3 are in addition to the reporting required by CERCLA § 103 or EPCRA § 304.

4.4 Off-Site Shipments

- (a) SDs may ship hazardous substances, pollutants, and contaminants from the Site to an off-Site facility only if they comply with Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. SDs will be deemed to be in compliance with CERCLA § 121(d)(3) and 40 C.F.R. § 300.440 regarding a shipment if SDs obtain a prior determination from EPA that the proposed receiving facility for such shipment is acceptable under the criteria of 40 C.F.R. § 300.440(b). SDs may ship Investigation Derived Waste (IDW) from the Site to an off-Site facility only if they comply with Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3), 40 C.F.R. § 300.440, EPA's *Guide to Management of Investigation Derived Waste*, OSWER 9345.3-03FS (Jan. 1992).
- (b) SDs may ship Waste Material from the Site to an out-of-state waste management facility only if, prior to any shipment, they provide notice to the appropriate state environmental official in the receiving facility's state and to the EPA Project Coordinator. This notice requirement will not apply to any off-Site shipments when the total quantity of all such shipments does not exceed 10 cubic yards. The notice must include the following information, if available: (1) the name and location of the receiving facility; (2) the type and quantity of Waste Material to be shipped; (3) the schedule for the shipment; and (4) the method of transportation. SDs also shall notify the state environmental official referenced above and the EPA Project Coordinator of any major changes in the shipment plan, such as a decision to ship the Waste Material to a different out-of-state facility. SDs shall provide the notice after the award of the contract for RA construction and before the Waste Material is shipped.

4.5 RA Construction Completion

- (a) For purposes of this ¶ 4.5, "RA Construction" includes, for any RA that involves the construction and operation of a system to achieve Performance Standards (for example, groundwater or surface water restoration remedies), the construction of such system and the performance of all activities necessary for the system to function properly and as designed.
- (b) **Inspection of Constructed Remedy.** SDs shall schedule an inspection to review the construction and operation of the system and to review whether the system is functioning properly and as designed. The inspection must be attended by SDs

and EPA and/or their representatives. A re-inspection must be conducted if requested by EPA.

- (c) **Shakedown Period.** There shall be a shakedown period of up to one year for EPA to review whether the remedy is functioning properly and performing as designed. SDs shall provide such information as EPA requests for such review.
- (d) **RA Report.** Following the shakedown period, SDs shall submit an “RA Report” requesting EPA’s determination that RA Construction has been completed. The RA Report must: (1) include statements by a registered professional engineer and by SDs’ Project Coordinator that construction of the system is complete and that the system is functioning properly and as designed; (2) include a demonstration, and supporting documentation, that construction of the system is complete and that the system is functioning properly and as designed; (3) include as-built drawings signed and stamped by a registered professional engineer; (4) be prepared in accordance with Chapter 2 (Remedial Action Completion) of EPA’s *Close Out Procedures for NPL Sites* guidance (May 2011); and (5) be certified in accordance with ¶ 6.5 (Certification).
- (e) If EPA determines that RA Construction is not complete, EPA shall so notify SDs. EPA’s notice must include a description of, and schedule for, the activities that SDs must perform to complete RA Construction. EPA’s notice may include a schedule for completion of such activities or may require SDs to submit a proposed schedule for EPA approval. SDs shall perform all activities described in the EPA notice in accordance with the schedule.
- (f) If EPA determines, based on the initial or any subsequent RA Report, that RA Construction is complete, EPA shall so notify SDs.

4.6 Certification of RA Completion

- (a) **Monitoring Report.** SDs shall submit a Monitoring Report to EPA requesting EPA’s Certification of RA Completion. The report must: (1) include certifications by a registered professional engineer and by SD’s Project Coordinator that the RA is complete; (2) be prepared in accordance with Chapter 2 (Remedial Action Completion) of EPA’s *Close Out Procedures for NPL Sites* guidance (May 2011); (3) contain monitoring data to demonstrate that Performance Standards have been achieved; and (4) be certified in accordance with ¶ 6.5 (Certification).
- (b) If EPA concludes that the RA is not Complete, EPA shall so notify SDs. EPA’s notice must include a description of any deficiencies. EPA’s notice may include a schedule for addressing such deficiencies or may require SDs to submit a schedule for EPA approval. SDs shall perform all activities described in the notice in accordance with the schedule.
- (c) If EPA concludes, based on the initial or any subsequent Monitoring Report requesting Certification of RA Completion, that the RA is Complete, EPA shall so certify to SDs. This certification will constitute the Certification of RA

Completion for purposes of the CD, including Section XVI of the CD (Covenants by the United States). Certification of RA Completion will not affect SDs' remaining obligations under the CD.

4.7 Certification of Work Completion

- (a) **Work Completion Inspection.** SDs shall schedule an inspection for the purpose of obtaining EPA's Certification of Work Completion. The inspection must be attended by SDs and EPA and/or their representatives.
- (b) **Work Completion Report.** Following the inspection, SDs shall submit a report to EPA requesting EPA's Certification of Work Completion. The report must:
 - (1) include certifications by a registered professional engineer and by SDs' Project Coordinator that the Work, including all O&M activities, is complete; and
 - (2) be certified in accordance with ¶ 6.5 (Certification). If the Monitoring Report submitted under ¶ 4.6(a) includes all elements required under this ¶ 4.7(b), then the Monitoring Report suffices to satisfy all requirements under this ¶ 4.7(b).
- (c) If EPA concludes that the Work is not complete, EPA shall so notify SDs. EPA's notice must include a description of the activities that SDs must perform to complete the Work. EPA's notice must include specifications and a schedule for such activities or must require SDs to submit specifications and a schedule for EPA approval. SDs shall perform all activities described in the notice or in the EPA-approved specifications and schedule.
- (d) If EPA concludes, based on the initial or any subsequent report requesting Certification of Work Completion, that the Work is complete, EPA shall so certify in writing to SDs. Issuance of the Certification of Work Completion does not affect the following continuing obligations: (1) activities under the Periodic Review Support Plan; (2) obligations under Sections VIII (Property Requirements), XX (Retention of Records), and XIX (Access to Information) of the CD; (3) Institutional Controls obligations as provided in the ICIAP; and (4) reimbursement of EPA's Future Response Costs under Section X (Payments for Response Costs) of the CD.

5. REPORTING

5.1 Progress Reports. Commencing with the month following lodging of the CD and until EPA approves the RA Construction Completion, SDs shall submit progress reports to EPA on a monthly basis, or as otherwise requested by EPA. The reports must cover all activities that took place during the prior reporting period, including:

- (a) The actions that have been taken toward achieving compliance with the CD;
- (b) A summary of all results of sampling, tests, and all other data received or generated by SDs;
- (c) A description of all deliverables that SDs submitted to EPA;

- (d) A description of all activities relating to RA Construction that are scheduled for the next six weeks;
- (e) An updated RA Construction Schedule, together with information regarding percentage of completion, delays encountered or anticipated that may affect the future schedule for implementation of the Work, and a description of efforts made to mitigate those delays or anticipated delays;
- (f) A description of any modifications to the work plans or other schedules that SDs have proposed or that have been approved by EPA; and
- (g) A description of all activities undertaken in support of the Community Involvement Plan (CIP) during the reporting period and those to be undertaken in the next six weeks.

5.2 Notice of Progress Report Schedule Changes. If the schedule for any activity described in the Progress Reports, including activities required to be described under ¶ 5.1(d), changes, SDs shall notify EPA of such change at least 7 days before performance of the activity.

6. DELIVERABLES

- 6.1 Applicability.** SDs shall submit deliverables for EPA approval or for EPA comment as specified in the SOW. If neither is specified, the deliverable does not require EPA's approval or comment. Paragraphs 6.2 (In Writing) through 6.4 (Technical Specifications) apply to all deliverables. Paragraph 6.5 (Certification) applies to any deliverable that is required to be certified. Paragraph 6.6 (Approval of Deliverables) applies to any deliverable that is required to be submitted for EPA approval.
- 6.2 In Writing.** As provided in ¶ 91 of the CD, all deliverables under this SOW must be in writing unless otherwise specified.
- 6.3** All deliverables must be submitted by the deadlines in the RD Schedule or RA Schedule, as applicable. SDs shall submit 2 hard copies, as well as electronic forms of all deliverables to EPA.
- 6.4 Technical Specifications**
 - (a) Sampling and monitoring data should be submitted in standard regional Electronic Data Deliverable (EDD) format specified by the EPA Project Coordinator. Other delivery methods may be allowed if electronic direct submission presents a significant burden or as technology changes.
 - (b) Unless as otherwise directed by EPA's project coordinator, spatial data, including spatially-referenced data and geospatial data, should be submitted: (1) in the ESRI File Geodatabase format; and (2) as unprojected geographic coordinates in decimal degree format using North American Datum 1983 (NAD83) or World Geodetic System 1984 (WGS84) as the datum. If applicable, submissions should

include the collection method(s). Projected coordinates may optionally be included but must be documented. Spatial data should be accompanied by metadata, and such metadata should be compliant with the Federal Geographic Data Committee (FGDC) Content Standard for Digital Geospatial Metadata and its EPA profile, the EPA Geospatial Metadata Technical Specification. An add-on metadata editor for ESRI software, the EPA Metadata Editor (EME), complies with these FGDC and EPA metadata requirements and is available at <https://edg.epa.gov/EME/>.

- (c) Each file must include an attribute name for each site unit or sub-unit submitted. Consult <http://www.epa.gov/geospatial/policies.html> for any further available guidance on attribute identification and naming.
- (d) Spatial data submitted by SDs does not, and is not intended to, define the boundaries of the Site.

6.5 Certification. All deliverables that require compliance with this ¶ 6.5 must be signed by the SDs' Project Coordinator, or other responsible official of SDs, and must contain the following statement:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

6.6 Approval of Deliverables

(a) Initial Submissions

- (1) After review of any deliverable that is required to be submitted for EPA approval under the CD or the SOW, EPA shall: (i) approve, in whole or in part, the submission; (ii) approve the submission upon specified conditions; (iii) disapprove, in whole or in part, the submission; or (iv) any combination of the foregoing.
- (2) EPA also may modify the initial submission to cure deficiencies in the submission if: (i) EPA determines that disapproving the submission and awaiting a resubmission would cause substantial disruption to the Work; or (ii) previous submission(s) have been disapproved due to material defects and the deficiencies in the initial submission under consideration indicate a bad faith lack of effort to submit an acceptable deliverable.

- (b) **Resubmissions.** Upon receipt of a notice of disapproval under ¶ 6.6(a) (Initial Submissions), or if required by a notice of approval upon specified conditions under ¶ 6.6(a), SDs shall, within 30 days or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the deliverable for approval. After review of the resubmitted deliverable, EPA may: (1) approve, in whole or in part, the resubmission; (2) approve the resubmission upon specified conditions; (3) modify the resubmission; (4) disapprove, in whole or in part, the resubmission, requiring SDs to correct the deficiencies; or (5) any combination of the foregoing.
- (c) **Implementation.** Upon approval, approval upon conditions, or modification by EPA under ¶ 6.6(a) (Initial Submissions) or ¶ 6.6(b) (Resubmissions), of any deliverable, or any portion thereof: (1) such deliverable, or portion thereof, will be incorporated into and enforceable under the CD; and (2) SDs shall take any action required by such deliverable, or portion thereof. The implementation of any non-deficient portion of a deliverable submitted or resubmitted under ¶ 6.6(a) or ¶ 6.6(b) does not relieve SDs of any liability for stipulated penalties under Section XV (Stipulated Penalties) of the CD.

6.7 Supporting Deliverables. SDs shall submit each of the following supporting deliverables for EPA approval, except as specifically provided. The deliverables must be submitted, for the first time, by the deadlines in the RD Schedule or the RA Schedule, or any other EPA-approved schedule, as applicable. SDs shall develop the deliverables in accordance with all applicable regulations, guidances, and policies (see Section 9 (References)). SDs shall update each of these supporting deliverables as necessary or appropriate during the course of the Work, and/or as requested by EPA.

- (a) **Health and Safety Plan.** The Health and Safety Plan (HASP) describes all activities to be performed to protect on site personnel and area residents from physical, chemical, and all other hazards posed by the Work. SDs shall develop the HASP in accordance with EPA's Emergency Responder Health and Safety and Occupational Safety and Health Administration (OSHA) requirements under 29 C.F.R. §§ 1910 and 1926. The HASP should cover RD activities and should be, as appropriate, updated to cover activities during the RA and updated to cover activities after RA completion. EPA does not approve the HASP, but will review it to ensure that all necessary elements are included and that the plan provides for the protection of human health and the environment.
- (b) **Emergency Response Plan.** The Emergency Response Plan (ERP) must describe procedures to be used in the event of an accident or emergency at the Site (for example, power outages, water impoundment failure, treatment plant failure, slope failure, etc.). The ERP must include:
 - (1) Name of the person or entity responsible for responding in the event of an emergency incident;

- (2) Plan and date(s) for meeting(s) with the local community, including local, State, and federal agencies involved in the cleanup, as well as local emergency squads and hospitals;
 - (3) Spill Prevention, Control, and Countermeasures (SPCC) Plan (if applicable), consistent with the regulations under 40 C.F.R. Part 112, describing measures to prevent, and contingency plans for, spills and discharges;
 - (4) Notification activities in accordance with ¶ 4.3(b) (Release Reporting) in the event of a release of hazardous substances requiring reporting under Section 103 of CERCLA, 42 U.S.C. § 9603, or Section 304 of the Emergency Planning and Community Right-to-know Act (EPCRA), 42 U.S.C. § 11004; and
 - (5) A description of all necessary actions to ensure compliance with Paragraph 11 (Emergencies and Releases) of the CD in the event of an occurrence during the performance of the Work that causes or threatens a release of Waste Material from the Site that constitutes an emergency or may present an immediate threat to public health or welfare or the environment.
- (c) **Field Sampling Plan.** The Field Sampling Plan (FSP) supplements the QAPP and addresses all sample collection activities. The FSP must be written so that a field sampling team unfamiliar with the project would be able to gather the samples and field information required. SDs shall develop the FSP in accordance with *Guidance for Conducting Remedial Investigations and Feasibility Studies*, EPA/540/G 89/004 (Oct. 1988).
- (d) **Quality Assurance Project Plan.** The Quality Assurance Project Plan (QAPP) addresses sample analysis and data handling regarding the Work. The QAPP must include a detailed explanation of SDs' quality assurance, quality control, and chain of custody procedures for all treatability, design, compliance, and monitoring samples. SDs shall develop the QAPP in accordance with *EPA Requirements for Quality Assurance Project Plans*, QA/R-5, EPA/240/B-01/003 (Mar. 2001, reissued May 2006); *Guidance for Quality Assurance Project Plans*., QA/G-5, EPA/240/R 02/009 (Dec. 2002); and *Uniform Federal Policy for Quality Assurance Project Plans*, Parts 1-3, EPA/505/B-04/900A through 900C (Mar. 2005). The QAPP also must include procedures:
- (1) To ensure that EPA and its authorized representatives have reasonable access to laboratories used by SDs in implementing the CD (SDs' Labs);
 - (2) To ensure that SDs' Labs analyze all samples submitted by EPA pursuant to the QAPP for quality assurance monitoring;
 - (3) To ensure that SDs' Labs perform all analyses using EPA-accepted methods (i.e., the methods documented in *USEPA Contract Laboratory*

Program Statement of Work for Inorganic Analysis, ILM05.4 (Dec. 2006); *USEPA Contract Laboratory Program Statement of Work for Organic Analysis*, SOM01.2 (amended Apr. 2007); and *USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration)*, ISM01.2 (Jan. 2010)) or other methods acceptable to EPA;

- (4) To ensure that SDs' Labs participate in an EPA-accepted QA/QC program or other program QA/QC acceptable to EPA;
 - (5) For SDs to provide EPA with notice at least 28 days prior to any sample collection activity;
 - (6) For SDs to provide split samples and/or duplicate samples to EPA upon request;
 - (7) For EPA to take any additional samples that it deems necessary;
 - (8) For EPA to provide to SDs, upon request, split samples and/or duplicate samples in connection with EPA's oversight sampling; and
 - (9) For SDs to submit to EPA all sampling and tests results and other data in connection with the implementation of the CD.
- (e) **Site Wide Monitoring Plan.** The purpose of the Site Wide Monitoring Plan (SWMP) is to obtain baseline information regarding the extent of contamination in affected media at the Site; to obtain information, through short- and long- term monitoring, about the movement of and changes in contamination throughout the Site, before and during implementation of the RA; to obtain information regarding contamination levels to determine whether Performance Standards (PS) are achieved; and to obtain information to determine whether to perform additional actions, including further Site monitoring. The SWMP must include:
- (1) Description of the environmental media to be monitored;
 - (2) Description of the data collection parameters, including existing and proposed monitoring devices and locations, schedule and frequency of monitoring, analytical parameters to be monitored, and analytical methods employed;
 - (3) Description of how performance data will be analyzed, interpreted, and reported, and/or other Site-related requirements;
 - (4) Description of verification sampling procedures;
 - (5) Description of deliverables that will be generated in connection with monitoring, including sampling schedules, laboratory records, monitoring reports, and monthly and annual reports to EPA and State agencies; and

- (6) Description of proposed additional monitoring and data collection actions (such as increases in frequency of monitoring, and/or installation of additional monitoring devices in the affected areas) in the event that results from monitoring devices indicate changed conditions (such as higher than expected concentrations of the contaminants of concern or groundwater contaminant plume movement).
- (f) **Construction Quality Assurance/Quality Control Plan (CQA/QCP).** The purpose of the Construction Quality Assurance Plan (CQAP) is to describe planned and systemic activities that provide confidence that the RA construction will satisfy all plans, specifications, and related requirements, including quality objectives. The purpose of the Construction Quality Control Plan (CQCP) is to describe the activities to verify that RA construction has satisfied all plans, specifications, and related requirements, including quality objectives. The CQA/QCP must:
- (1) Identify, and describe the responsibilities of, the organizations and personnel implementing the CQA/QCP;
 - (2) Describe the PS required to be met to achieve Completion of the RA;
 - (3) Describe the activities to be performed: (i) to provide confidence that PS will be met; and (ii) to determine whether PS have been met;
 - (4) Describe verification activities, such as inspections, sampling, testing, monitoring, and production controls, under the CQA/QCP;
 - (5) Describe industry standards and technical specifications used in implementing the CQA/QCP;
 - (6) Describe procedures for tracking construction deficiencies from identification through corrective action;
 - (7) Describe procedures for documenting all CQA/QCP activities; and
 - (8) Describe procedures for retention of documents and for final storage of documents.
- (g) **O&M Plan.** The O&M Plan describes the requirements for inspecting, operating, and maintaining the RA, both before and after achievement of the PS. SDs shall develop the O&M Plan in accordance with *Operation and Maintenance in the Superfund Program*, OSWER 9200.1 37FS, EPA/540/F-01/004 (May 2001). The O&M Plan must include the following additional requirements:
- (1) Description of PS required to be met to implement the ROD;
 - (2) Description of activities to be performed: (i) to provide confidence that PS will be met; and (ii) to determine whether PS have been met;

- (3) **O&M Reporting.** Description of records and reports that will be generated during O&M, such as daily operating logs, laboratory records, records of operating costs, reports regarding emergencies, personnel and maintenance records, monitoring reports, and monthly and annual reports to EPA and State agencies;
 - (4) Description of corrective action in case of systems failure, including:
 - (i) alternative procedures to prevent the release or threatened release of Waste Material which may endanger public health and the environment or may cause a failure to achieve PS; (ii) analysis of vulnerability and additional resource requirements should a failure occur; (iii) notification and reporting requirements should O&M systems fail or be in danger of imminent failure; and (iv) community notification requirements; and
 - (5) Description of corrective action to be implemented in the event that PS are not achieved; and a schedule for implementing these corrective actions.
- (h) **O&M Manual.** The O&M Manual serves as a guide to the purpose and function of the equipment and systems that make up the remedy. SDs shall develop the O&M Manual in accordance with *Operation and Maintenance in the Superfund Program*, OSWER 9200.1 37FS, EPA/540/F-01/004 (May 2001).
- (i) **Institutional Controls Implementation and Assurance Plan.** The Institutional Controls Implementation and Assurance Plan (ICIAP) describes plans to implement, maintain, and enforce the Institutional Controls (ICs) at the Site. SDs shall develop the ICIAP in accordance with *Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites*, OSWER 9355.0-89, EPA/540/R-09/001 (Dec. 2012), and *Institutional Controls: A Guide to Preparing Institutional Controls Implementation and Assurance Plans at Contaminated Sites*, OSWER 9200.0-77, EPA/540/R-09/02 (Dec. 2012). The ICIAP must include the following additional requirements:
- (1) Locations of recorded real property interests (e.g., easements, liens) and resource interests in the property that may affect ICs (e.g., surface, mineral, and water rights) including accurate mapping and geographic information system (GIS) coordinates of such interests; and
 - (2) Legal descriptions and survey maps that are prepared according to current American Land Title Association (ALTA) Survey guidelines and certified by a licensed surveyor.
- (j) **Periodic Review Support Plan.** The Periodic Review Support Plan addresses the studies and investigations that SDs shall conduct to support EPA's reviews of whether the RA is protective of human health and the environment in accordance with Section 121(c) of CERCLA, 42 U.S.C. § 9621(c) (also known as "Five-year Reviews"). SD shall develop the plan in accordance with *Comprehensive Five-*

year Review Guidance, OSWER 9355.7-03B-P (June 2001), and any other relevant five-year review review guidances.

7. SCHEDULES

- 7.1 Applicability and Revisions.** All deliverables and tasks required under this SOW must be submitted or completed by the deadlines or within the time durations listed in the RD and RA Schedules set forth below. SDs may submit proposed revised RD Schedules or RA Schedules for EPA approval. Upon EPA's approval, the revised RD and/or RA Schedules supersede the RD and RA Schedules set forth below, and any previously-approved RD and/or RA Schedules.

7.2 RD Schedule

	Description of Deliverable, Task	Included Supporting Deliverable	¶ Ref.	Deadline
1	RDWP	HASP, ERP, FSP, QAPP, SWMP,	3.2 7.7	90 days after EPA's Authorization to Proceed
2	PDIWP		3.4	90 days after EPA's Authorization to Proceed
3	PDI Evaluation Report		3.4	90 days after all PDI analytical data is validated
4	Preliminary (30%) RD	CQA/QCP, O&M Plan, O&M Manual, ICIAP	5 7.7	120 days after EPA approval of Final RDWP
5	Pre-final (90/95%) RD	Same as for Preliminary RD	3.6	150 days after EPA comments on Preliminary RD
6	Final (100%) RD	Same as for Pre-final RD	3.7	60 days after EPA comments on Pre-final RD

7.3 RA Schedule

	Description of Deliverable / Task	¶ Ref.	Deadline
1	Award RA contract		90 days after EPA Notice of Authorization to Proceed with RA
2	RAWP	4.1	90 days after EPA Notice of Authorization to Proceed with RA
3	Pre-Construction Conference	4.2(a)	30 days after Approval of RAWP
4	Start of Construction		30 days after Approval of RAWP
5	Completion of Construction		
6	Pre-final Inspection	4.5(b)	15 days after completion of construction
7	Pre-final Inspection Report	4.5(d)	30 days after completion of Pre-final Inspection
8	Final Inspection		15 days after Completion of Work identified in Pre-final Inspection Report
9	RA Report	4.5(d)	60 days after Final Inspection
10	Monitoring Report	4.6(a)	
11	Work Completion Report	4.7(b)	
12	Periodic Review Support Plan	6.7(j)	Three years after Start of RA Construction

8. STATE PARTICIPATION

- 8.1 Copies.** SDs shall, at any time they send a deliverable to EPA, send a copy of such deliverable to the State. EPA shall, at any time it sends a notice, authorization, approval, disapproval, or certification to SDs, send a copy of such document to the State.
- 8.2 Review and Comment.** The State will have a reasonable opportunity for review and comment prior to:
- (a) Any EPA approval or disapproval under ¶ 6.6 (Approval of Deliverables) of any deliverables that are required to be submitted for EPA approval; and
 - (b) Any approval or disapproval of the Construction Phase under ¶ 4.5 (RA Construction Completion), any disapproval of, or Certification of RA Completion under ¶ 4.6 (Certification of RA Completion), and any disapproval of, or Certification of Work Completion under ¶ 4.7 (Certification of Work Completion).

9. REFERENCES

- 9.1** The following regulations and guidance documents, among others, apply to the Work. Any item for which a specific URL is not provided below is available on one of the two EPA Web pages listed in ¶ 9.2:
- (a) A Compendium of Superfund Field Operations Methods, OSWER 9355.0-14, EPA/540/P-87/001a (Aug. 1987).

- (b) CERCLA Compliance with Other Laws Manual, Part I: Interim Final, OSWER 9234.1-01, EPA/540/G-89/006 (Aug. 1988).
- (c) Guidance for Conducting Remedial Investigations and Feasibility Studies, OSWER 9355.3-01, EPA/540/G-89/004 (Oct. 1988).
- (d) CERCLA Compliance with Other Laws Manual, Part II, OSWER 9234.1-02, EPA/540/G-89/009 (Aug. 1989).
- (e) Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, OSWER 9355.5-01, EPA/540/G-90/001 (Apr. 1990).
- (f) Guidance on Expediting Remedial Design and Remedial Actions, OSWER 9355.5-02, EPA/540/G-90/006 (Aug. 1990).
- (g) Guide to Management of Investigation-Derived Wastes, OSWER 9345.3-03FS (Jan. 1992).
- (h) Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, OSWER 9355.7-03 (Feb. 1992).
- (i) Guidance for Conducting Treatability Studies under CERCLA, OSWER 9380.3-10, EPA/540/R-92/071A (Nov. 1992).
- (j) National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, 40 C.F.R. Part 300 (Oct. 1994).
- (k) Guidance for Scoping the Remedial Design, OSWER 9355.0-43, EPA/540/R-95/025 (Mar. 1995).
- (l) Remedial Design/Remedial Action Handbook, OSWER 9355.0-04B, EPA/540/R-95/059 (June 1995).
- (m) EPA Guidance for Data Quality Assessment, Practical Methods for Data Analysis, QA/G-9, EPA/600/R-96/084 (July 2000).
- (n) Operation and Maintenance in the Superfund Program, OSWER 9200.1-37FS, EPA/540/F-01/004 (May 2001).
- (o) Comprehensive Five-year Review Guidance, OSWER 9355.7-03B-P, 540-R-01-007 (June 2001).
- (p) Guidance for Quality Assurance Project Plans, QA/G-5, EPA/240/R-02/009 (Dec. 2002).
- (q) Institutional Controls: Third Party Beneficiary Rights in Proprietary Controls (Apr. 2004).

- (r) Quality Systems for Environmental Data and Technology Programs -- Requirements with Guidance for Use, ANSI/ASQ E4-2004 (2004).
- (s) Uniform Federal Policy for Quality Assurance Project Plans, Parts 1-3, EPA/505/B-04/900A through 900C (Mar. 2005).
- (t) Superfund Community Involvement Handbook, EPA/540/K-05/003 (Apr. 2005).
- (u) EPA Guidance on Systematic Planning Using the Data Quality Objectives Process, QA/G-4, EPA/240/B-06/001 (Feb. 2006).
- (v) EPA Requirements for Quality Assurance Project Plans, QA/R-5, EPA/240/B-01/003 (Mar. 2001, reissued May 2006).
- (w) EPA Requirements for Quality Management Plans, QA/R-2, EPA/240/B-01/002 (Mar. 2001, reissued May 2006).
- (x) USEPA Contract Laboratory Program Statement of Work for Inorganic Analysis, ILM05.4 (Dec. 2006).
- (y) USEPA Contract Laboratory Program Statement of Work for Organic Analysis, SOM01.2 (amended Apr. 2007).
- (z) EPA National Geospatial Data Policy, CIO Policy Transmittal 05-002 (Aug. 2008), available at <http://www.epa.gov/geospatial/policies.html> and http://www.epa.gov/geospatial/docs/National_Geospatial_Data_Policy.pdf.
- (aa) Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration, OSWER 9283.1-33 (June 2009).
- (bb) Principles for Greener Cleanups (Aug. 2009), available at <http://www.epa.gov/oswer/greenercleanups/>.
- (cc) Providing Communities with Opportunities for Independent Technical Assistance in Superfund Settlements, Interim (Sep. 2009).
- (dd) USEPA Contract Laboratory Program Statement of Work for Inorganic Superfund Methods (Multi-Media, Multi-Concentration), ISM01.2 (Jan. 2010).
- (ee) Close Out Procedures for National Priorities List Sites, OSWER 9320.2-22 (May 2011).
- (ff) Groundwater Road Map: Recommended Process for Restoring Contaminated Groundwater at Superfund Sites, OSWER 9283.1-34 (July 2011).
- (gg) Recommended Evaluation of Institutional Controls: Supplement to the "Comprehensive Five-Year Review Guidance," OSWER 9355.7-18 (Sep. 2011).

- (hh) Construction Specifications Institute's MasterFormat 2012, available from the Construction Specifications Institute, www.csinet.org/masterformat.
- (ii) Updated Superfund Response and Settlement Approach for Sites Using the Superfund Alternative Approach , OSWER 9200.2-125 (Sep. 2012)
- (jj) Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites, OSWER 9355.0-89, EPA/540/R-09/001 (Dec. 2012).
- (kk) Institutional Controls: A Guide to Preparing Institutional Controls Implementation and Assurance Plans at Contaminated Sites, OSWER 9200.0-77, EPA/540/R-09/02 (Dec. 2012).
- (ll) EPA's Emergency Responder Health and Safety Manual, OSWER 9285.3-12 (July 2005 and updates), <http://www.epaossc.org/HealthSafetyManual/manual-index.htm>
- (mm) Broader Application of Remedial Design and Remedial Action Pilot Project Lessons Learned, OSWER 9200.2-129 (Feb. 2013).
- (nn) Guidance for Evaluating Completion of Groundwater Restoration Remedial Actions, OSWER 9355.0-129 (Nov. 2013).
- (oo) Groundwater Remedy Completion Strategy: Moving Forward with the End in Mind, OSWER 9200.2-144 (May 2014).

9.2 A more complete list may be found on the following EPA Web pages:

Laws, Policy, and Guidance <http://www.epa.gov/superfund/policy/index.htm>

Test Methods Collections <http://www.epa.gov/fem/methcollectns.htm>

9.3 For any regulation or guidance referenced in the CD or SOW, the reference will be read to include any subsequent modification, amendment, or replacement of such regulation or guidance. Such modifications, amendments, or replacements apply to the Work only after SDs receive notification from EPA of the modification, amendment, or replacement.

UNITED STATES DISTRICT COURT FOR THE
SOUTHERN DISTRICT OF ILLINOIS

UNITED STATES OF AMERICA,

Plaintiff,

v.

[LIST OF SETTling DEFENDANTS],

Defendants.

CONSENT DECREE FOR REMEDIAL DESIGN/REMEDIAL ACTION
AND RECOVERY OF RESPONSE COSTS
FOR OPERABLE UNIT 1 SAUGET AREA 2 SUPERFUND SITE

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I. BACKGROUND

A. The United States of America ("United States"), on behalf of the Administrator of the United States Environmental Protection Agency (EPA), filed a complaint in this matter pursuant to Sections 106 and 107 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9606 and 9607.

B. The United States in its complaint seeks, inter alia: (1) reimbursement of costs incurred by EPA and the Department of Justice (DOJ) for response actions at the Sauget Area 2 – Operable Unit 1 Superfund Site in Sauget, Illinois ("Site"), together with accrued interest; and (2) performance of response actions by the defendants at the Site consistent with the National Contingency Plan, 40 C.F.R. Part 300 (NCP).

C. This Remedial Design/Remedial Action ("RD/RA") and cost recovery consent decree between the United States and the Settling Defendants set forth in the above caption implements the remedy set forth in EPA's December 14, 2013 Record of Decision involving Operable Unit 1 ("OU 1") of the Sauget Area 2 Superfund Site in Sauget and Cahokia, St. Clair County, Illinois. OU 1 of Sauget Area 2 is comprised of contaminated soils, sediments, and surface water, including groundwater and surface water contamination source areas. This consent decree does not address contaminated groundwater at the Site. EPA intends to address Sauget area-wide groundwater contamination in Sauget Areas 1 and 2 as a separate operable unit after the groundwater contamination source remedies are implemented in this decree for Sauget Area 2-OU 1 and the previously entered RD/RA decree for adjoining Sauget Area 1 - OU 1.

D. EPA and the State, through the Illinois Environmental Protection Agency ("IEPA"), have been investigating the Sauget Areas 1 and 2 Sites since the early 1980s. The Sauget Area 1 Site consists of three closed landfills (Sites G, H, and I); two former surface impoundments (Site L); one flooded borrow pit (Site M); one filled borrow pit (Site N); and a stream known as Dead Creek and its Creek Segments ("CS") A through F. The Sauget Area 2 Site consists of five inactive disposal areas (Sites O, P, Q, R, and S). Of these five disposal sites, three are closed landfills (Sites P, Q, and R), one consists of four closed sludge lagoons (Site O), and one is a waste disposal site (Site S) associated with an abandoned solvent reclamation facility.

E. In 1995, EPA conducted a fund-lead removal action along the shore of the Mississippi River at Site Q Central, removing polychlorinated biphenyls (PCB) contaminated soils and drums exposed by erosion during River flooding. In 1999 and 2000, EPA completed a second, larger removal action at Site Q South. In that action, EPA excavated waste from eight different areas on 25 acres of Site Q South. Approximately 17,032 tons of waste, comprised of about 20 percent low-level waste (soil concentrations less than 50 parts per million (ppm) of PCBs) and 80 percent high-level waste (soil concentrations greater than 50 ppm of PCBs), were shipped off-Site for disposal. In addition, 3,271 drums were removed and disposed off-Site.

F. On October 4, 2006, the United States of America ("United States") filed a Complaint against 22 potentially responsible parties, asserting a claim under Section 107(a) of

the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. § 9607(a) for recovery of past costs related to the removal action at Site Q and a claim for declaratory judgment to recover future response costs related to the removal action at Site Q. *United States v. Afton Chemical Corp.*, et al., Civil Action No. 06-763-GPG. On the same date, the United States lodged a consent decree resolving these claims with all defendants except for the Estate of Paul Sauget. On January 30, 2007, the Court entered this Consent Decree, requiring payment of \$2.6 million of the government's past response costs. On September 21, 2007, the United States entered into a cost recovery consent decree with the Estate of Paul Sauget, which contained a stipulated judgment (based on a finding of inability to pay) in the amount of \$351,000. On February 19, 2008, the Court entered the Consent Decree with the Estate of Paul Sauget.

G. In 2002, EPA issued an interim remedy UAO to 76 Sauget Area 2 PRPs to capture and treat a groundwater plume releasing into the Mississippi River. The PRPs, led by Solutia and Monsanto, installed and continue to operate the required remedial action, referred to as the "Groundwater Migration Control System" or "GMCS" at the Site. The GMCS consists of a 140-foot deep, 3500-foot wide "U"-shaped, fully penetrating jet grouted barrier wall and groundwater extraction wells, located adjacent to Site R near the Mississippi River. The installation was completed in 2005. The principal threat wastes identified on Site Q North and Site R, as well as the non-aqueous phase liquids (NAPLs) located at these two sites, are captured by the GMCS and treated by the Village of Sauget American Bottoms Regional Water Treatment Facility (ABRTF). On February 8, 2013, the United States filed a cost recovery claim against Defendants Solutia and Pharmacia before the District Court for Southern District of Illinois. *United States v. Pharmacia LLC and Solutia Inc.*, Civil Action No. 13-138 (S.D. Ill.). On March 11, 2015, the Court entered a Consent Decree signed by the parties resolving that action.

H. In 2000, EPA entered into an Administrative Order on Consent (AOC) with a subset of the Sauget Area 2 PRPs to conduct a remedial investigation/feasibility study (RI/FS) at the five Sauget Area 2 waste disposal sites (Sites O, P, Q, R, and S) to investigate and assess what cleanup remained to be done at Sauget Area 2 after the above referenced response actions were completed. The PRPs conducted RI activities from June 2002 through October 2002 under the AOC, with EPA oversight. EPA's review of the draft RI/FS report submitted in 2004 determined that supplemental investigation (SI) work was necessary to fill data gaps. The PRPs' supplemental investigation work consisted of the following: additional field investigations, installation of monitoring well clusters, NAPL investigation, vapor intrusion investigation, principal threat waste investigation, and completion of a regional fate and transport groundwater model to fill data gaps in the RI/FS. During the RI and SI from 2002 through 2007, the PRPs conducted extensive Site investigations of disposal areas, groundwater, surface water, air, waste, and soil. EPA evaluated results of these investigation studies in the Final FS Report for Sauget Area 2 issued in May 2013.

I. From 1901 to 1997, Pharmacia Corporation (formerly known as Monsanto Ag Company) owned and operated what came to be known as the Queeny Plant located in St. Louis, Missouri. From 1917 to 1997, Pharmacia Corporation owned and operated what came to be known as the Krummrich Plant in Sauget, Illinois.

J. In 1997, Pharmacia spun-off its chemical manufacturing business that included the Queeny and Krummrich plants, to Solutia Inc. Solutia is the current owner of the Krummrich plant and associated real property. Solutia and Pharmacia entered into an indemnification agreement whereby Solutia assumed financial responsibility for certain existing environmental claims against Pharmacia, including claims under CERCLA with respect to, *inter alia*, the Sauget Area 2 Site (as defined below and depicted on the map in Appendix A).

K. In February 2000, Monsanto Ag Company was incorporated as a wholly-owned subsidiary of Pharmacia. In March 2000, Pharmacia merged with Pharmacia & Upjohn Inc. and changed its name to Pharmacia Corporation. In March 2000, Monsanto Ag Company changed its name to Monsanto Company (hereinafter "New Monsanto"). Pharmacia Corporation was purchased by Pfizer Inc. in April 2003 and is maintained as a wholly-owned subsidiary of Pfizer Inc. In 2012, Pharmacia Corporation converted to a limited liability company and changed its name to Pharmacia LLC.

L. Pursuant to the September 1, 2000 Separation Agreement between New Monsanto and Pharmacia, New Monsanto indemnified Pharmacia for certain liabilities, including environmental liabilities related to the Sauget Area 2 Site, to the extent that Solutia fails to pay, perform, or discharge those liabilities.

M. The Site has been proposed for placement on the National Priorities List ("NPL"), 40 C.F.R. Part 300, Appendix B.

N. The decision by EPA on the remedial action to be implemented for OU 1 at the Site is embodied in a final Record of Decision ("ROD"), executed on December 16, 2014, on which the State had a reasonable opportunity to review and comment and on which the State has given its concurrence. The ROD includes EPA's explanation for any significant differences between the final plan and the proposed plan, as well as a responsiveness summary to the public comments. Notice of the final plan was published in accordance with Section 117(b) of CERCLA, 42 U.S.C. § 9617(b).

O. In accordance with the National Contingency Plan, 40 C.F.R. Part 300 ("NCP") and Section 121(f)(1)(F) of CERCLA, 42 U.S.C. § 9621(f)(1)(F), EPA notified the State of Illinois (the "State") on [DATE], of negotiations with potentially responsible parties ("PRPs") regarding the implementation of the RD/RA for the Site, and EPA has provided the State with an opportunity to participate in such negotiations and be a party to this Consent Decree. The State, through the IEPA, has not objected to this Consent Decree.

P. In accordance with Section 122(j)(1) of CERCLA, 42 U.S.C. § 9622(j)(1), EPA notified the United States Fish and Wildlife Service on [DATE], of negotiations with PRPs

regarding the release of hazardous substances that may have resulted in injury to the natural resources under federal trusteeship and encouraged the trustee to participate in the negotiation of this Consent Decree.

Q. EPA also notified the Illinois Department of Natural Resources and IEPA of negotiations with PRPs regarding the release of hazardous substances that may have resulted in injury to the natural resources under state trusteeship and encouraged these trustees to participate in the negotiations of this Consent Decree.

R. The Settling Defendants that have entered into this Consent Decree do not admit any liability to the United States arising out of the transactions or occurrences alleged in the complaint.

S. Based on the information presently available to EPA, EPA believes that the Work will be properly and promptly conducted by Settling Defendants if conducted in accordance with this Consent Decree and its appendices.

T. Solely for the purposes of Section 113(j) of CERCLA, 42 U.S.C. § 9613(j), the remedy set forth in the ROD and the Work to be performed by Settling Defendants shall constitute a response action taken or ordered by the President for which judicial review shall be limited to the administrative record.

U. The Parties recognize, and the Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith and implementation of this Consent Decree will expedite the cleanup of the Site and will avoid prolonged and complicated litigation between the Parties, and that this Consent Decree is fair, reasonable, and in the public interest.

NOW, THEREFORE, it is hereby Ordered, Adjudged, and Decreed:

II. JURISDICTION

1. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1345, and 42 U.S.C. §§ 9606, 9607, and 9613(b). This Court also has personal jurisdiction over SDs. Solely for the purposes of this Consent Decree and the underlying complaint, SDs waive all objections and defenses that they may have to jurisdiction of the Court or to venue in this District. SDs shall not challenge the terms of this Consent Decree or this Court's jurisdiction to enter and enforce this Consent Decree.

III. PARTIES BOUND

2. This Consent Decree is binding upon the United States and upon SDs and their successors and assigns. Any change in ownership or corporate or other legal status of a SD including, but not limited to, any transfer of assets or real or personal property, shall in no way alter such SD's responsibilities under this Consent Decree.

3. SDs shall provide a copy of this Consent Decree to each contractor hired to perform the Work and to each person representing any SD with respect to the Site or the Work, and shall condition all contracts entered into hereunder upon performance of the Work in conformity with the terms of this Consent Decree. SDs or their contractors shall provide written notice of the Consent Decree to all subcontractors hired to perform any portion of the Work. SDs shall nonetheless be responsible for ensuring that their contractors and subcontractors perform the Work in accordance with the terms of this Consent Decree. With regard to the activities undertaken pursuant to this Consent Decree, each contractor and subcontractor shall be deemed to be in a contractual relationship with SDs within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3).

IV. DEFINITIONS

4. Unless otherwise expressly provided in this Consent Decree, terms used in this Consent Decree that are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Consent Decree or its appendices, the following definitions shall apply solely for purposes of this Consent Decree:

- a. "Affected Property" shall mean all real property at the Site and any other real property where EPA determines, at any time, that access, land, water, or other resource use restrictions, and/or Institutional Controls are needed to implement the Remedial Action, including, but not limited to, the properties on which Sites O, P, Q, R, and S are located.
- b. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601-9675.
- c. "Consent Decree" or "CD" shall mean this consent decree and all appendices attached hereto (listed in Section XXIII). In the event of conflict between this Consent Decree and any appendix, this Consent Decree shall control.
- d. "Day" or "day" shall mean a calendar day. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or federal or State holiday, the period shall run until the close of business of the next working day.
- e. "DOJ" shall mean the United States Department of Justice and its successor departments, agencies, or instrumentalities.
- f. "Effective Date" shall mean the date upon which the approval of this Consent Decree is recorded on the Court's docket.
- g. "EPA" shall mean the United States Environmental Protection Agency and its successor departments, agencies, or instrumentalities.

- h. "EPA Hazardous Substance Superfund" shall mean the Hazardous Substance Superfund established by the Internal Revenue Code, 26 U.S.C. § 9507.
- i. "Future Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States incurs in reviewing or developing deliverables submitted pursuant to this Consent Decree, in overseeing implementation of the Work, or otherwise implementing, overseeing, or enforcing this Consent Decree, including, but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to ¶ 11 (Emergencies and Releases), ¶ 12 (Community Involvement) (including the costs of any technical assistance grant under Section 117(e) of CERCLA, 42 U.S.C. § 9617(e)), ¶ 25 (Access to Financial Assurance by EPA), Section VII (Remedy Review), Section VIII (Property Requirements) (including the cost of attorney time and any monies paid to secure or enforce access or land, water, or other resource use restrictions and/or to secure, implement, monitor, maintain, or enforce Institutional Controls including the amount of just compensation), and Section XIV (Dispute Resolution), and all litigation costs. Future Response Costs shall also include all Interim Response Costs, and all Interest on those Past Response Costs SDs have agreed to pay under this CD that has accrued pursuant to 42 U.S.C. § 9607(a) during the period from April 1, 2017 to the Effective Date.
- j. "IEPA" shall mean the Illinois Environmental Protection Agency and any successor departments or agencies of the State.
- k. "Institutional Controls" shall mean Proprietary Controls and state or local laws, regulations, ordinances, zoning restrictions, or other governmental controls or notices that: (a) limit land, water, or other resource use to minimize the potential for human exposure to Waste Material at or in connection with the Site; (b) limit land, water, or other resource use to implement, ensure non-interference with, or ensure the protectiveness of the Remedial Action; and/or (c) provide information intended to modify or guide human behavior at or in connection with the Site.
- l. "Institutional Control Implementation and Assurance Plan" or "ICIAP" shall mean the plan for implementing, maintaining, monitoring, and reporting on the Institutional Controls set forth in the ROD, prepared in accordance with the SOW.
- m. "Interim Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, (a) paid by the United States in connection with the Site between April 1, 2017 and the Effective Date, or (b) incurred prior to the Effective Date but paid after that date.
- n. "Interest" shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is

subject to change on October 1 of each year. Rates are available online at <https://www.epa.gov/superfund/superfund-interest-rates>.

- o. "Interest Earned" shall mean interest earned on amounts in the Sauget Area 2 Remediation Account, which shall be computed monthly at a rate based on the annual return on investments of the EPA Hazardous Substance Superfund. The applicable rate of interest shall be the rate in effect at the time the interest accrues.
- p. "Municipal Solid Waste" or "MSW" shall mean waste material: (a) generated by a household (including a single or multifamily residence); or (b) generated by a commercial, industrial, or institutional entity, to the extent that the waste material (1) is essentially the same as waste normally generated by a household; (2) is collected and disposed of with other municipal solid waste as part of normal municipal solid waste collection services; and (3) contains a relative quantity of hazardous substances no greater than the relative quantity of hazardous substances contained in waste material generated by a typical single-family household.
- q. "National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.
- r. "Non-Settling Owner" shall mean any person, other than a SD, that owns or controls any Affected Property. The clause "Non-Settling Owner's Affected Property" means Affected Property owned or controlled by Non-Settling Owner.
- s. "Operable Unit 1" or "OU 1" consists of the soil, sediments, and surface water, including the groundwater contamination source areas, at the Sauget Area 2 Site, as defined in subparagraph 4.ff. of this Consent Decree. Operable Unit 1 does not include groundwater contamination or Sauget Area 2.
- t. "Operation and Maintenance" or "O&M" shall mean all activities required to operate, maintain, and monitor the effectiveness of the Remedial Action as specified in the SOW or any EPA-approved O&M Plan.
- u. "Owner SD" shall mean any SD that owns or controls any Affected Property, including [insert names]. The clause "Owner SD's Affected Property" means Affected Property owned or controlled by Owner SD.
- v. "Paragraph" or "¶" shall mean a portion of this Consent Decree identified by an Arabic numeral or an upper or lower case letter.
- w. "Parties" shall mean the United States and Settling Defendants.
- x. "Past Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States paid at or in connection with the Site

through March 31, 2017, plus Interest on all such costs that has accrued pursuant to 42 U.S.C. § 9607(a) through such date.

- y. "Performance Standards" shall mean the cleanup levels and other measures of achievement of the Remedial Action objectives, as set forth in the ROD and the SOW and any modified standards established pursuant to this Consent Decree.
- z. "Proprietary Controls" shall mean easements or covenants running with the land that (a) limit land, water, or other resource use and/or provide access rights and (b) are created pursuant to common law or statutory law by an instrument that is recorded in the appropriate land records office.
- aa. "RCRA" shall mean the Solid Waste Disposal Act, 42 U.S.C. §§ 6901-6992 (also known as the Resource Conservation and Recovery Act).
- bb. "Record of Decision" or "ROD" shall mean the EPA Record of Decision relating to the OU 1 at the Sauget Area 2 Site signed on December 16, 2013, by the Director of the Superfund Division, EPA Region 5, and all attachments thereto. The ROD is attached as Appendix B.
- cc. "Remedial Action" or "RA" shall mean the remedial action selected in the ROD.
- dd. "Remedial Design" or "RD" shall mean those activities to be undertaken by SDs to develop final plans and specifications for the RA as stated in the SOW.
- ee. "Sauget Area 2 Site" or "Site" means the geographic area so named and identified by EPA, located within the corporate limits of the Village of Sauget, Illinois and extending into the adjoining Village of Cahokia, Illinois, and depicted generally on the map attached hereto as Appendix A. It includes the areas described in subparagraphs 4.ff.a through e of this Consent Decree as well as the areal extent of contamination in soils, sediment, surface water and groundwater released therefrom, except that, for the purposes of this Consent Decree, the Sauget Area 2 Site does not include groundwater and does not include the Sauget Area 2 Site, or soils, sediments, surface water, or groundwater of the Sauget Area 2 Site. Specifically, Sauget Area 2 Site contains the following source areas and creek segments:
 - a. "Site O," depicted generally on the map attached hereto as Appendix A, is located on Mobile Avenue in Sauget, Illinois, Site O occupies approximately 28 acres of land to the northeast of the American Bottoms Regional Wastewater Treatment Facility (ABRTF). Site O consists of four inactive sludge dewatering lagoons associated with the old Village of Sauget Physical/Chemical Wastewater Treatment Plant (P/C plant) and two adjacent areas where wastes came to be located.
 - b. "Site P," depicted generally on the map attached hereto as Appendix A, is

located between the Illinois Central Gulf Railroad and the Terminal Railroad and north of Monsanto Avenue in the Village of Sauget. Site P is a former licensed solid waste landfill which occupies approximately 32 acres of land t.

- c. “Site Q,” depicted generally on the map attached hereto as Appendix A, is located in the Villages of Sauget and Cahokia, Illinois, and is bordered by Sauget Site R and the old Union Electric Power Plant on the north; the Illinois Central Gulf Railroad and the United States Army Corps of Engineers (U.S. ACOE) flood control levee on the east; and the Mississippi River on the west. Due to its large size and varied disposal history, Site Q was divided into four sections based on the nature and extent of contamination and the anticipated remedial actions that would be recommended there: Site Q Dogleg, Site Q North, Site Q Central, and South Q South.
 - (i) Site Q Dogleg: The northern portion of Site Q and due east of Site R, bounded on the north and south by extensions of the Site R north and south boundaries.
 - (ii) Site Q North: The northern portion of Site Q minus Site Q Dogleg. Q North and Q Dogleg together occupy approximately 52 acres.
 - (iii) Site Q Central: The central portion of Site Q, approximately 67 acres.
 - (iv) Site Q South: This portion of Site Q is south of the Alton & Southern Railroad, and is approximately 87 acres in size.
- d. “Site R,” depicted generally on the map attached hereto as Appendix A, is located on the River side of the flood control levee immediately adjacent to the Mississippi River in Sauget, Illinois and just north and west of parts of Site Q. Site R was operated for 20 years as Monsanto’s chemical waste landfill. Site R is alternately known as the “Sauget Toxic Dump,” “Monsanto Landfill,” and the “River’s Edge Landfill.”
- e. “Site S,” depicted generally on the map attached hereto as Appendix A, is located in the Village of Sauget and is approximately 1 acre in size. The site is situated to the west-southwest of Site O and to the west of and in close proximity to the old Clayton Chemical solvent recycling facility.
- ff. “Sauget Area 2 Remediation Account” shall mean the special account with that name established by EPA within the Hazardous Substance Superfund pursuant to Paragraph 9.b. of the consent decree entered on December 15, 2009, in *United States v. Pharmacia Corp., et al.*, Civil Action No. 99-063 (S.D. Ill.).

- gg. "Sauget Area 2 Site Special Account" shall mean the special account, within the EPA Hazardous Substance Superfund, established for the Site by EPA pursuant to Section 122(b)(3) of CERCLA, 42 U.S.C. § 9622(b)(3), and in the consent decree entered in the United States District Court for the Southern District of Illinois on October 4, 2006, in *United States v. Afton Chem. Co., et al.*, Case No. 3:06-cv-00763.
- hh. "Section" shall mean a portion of this Consent Decree identified by a Roman numeral.
- ii. "Settling Defendants" or "SDs" shall mean those Parties identified in Appendix ___, and their successors and assigns.
- jj. "State" shall mean the State of Illinois.
- kk. "Statement of Work" or "SOW" shall mean the document describing the activities SDs must perform to implement the RD, the RA, and O&M regarding the Site, which is attached as Appendix ___ to this Consent Decree and any modifications made in accordance with this Consent Decree.
- ll. "Supervising Contractors" shall mean the principal contractors retained by SDs to supervise and direct the implementation of the Work under this Consent Decree.
- mm. "Transfer" shall mean to sell, assign, convey, lease, mortgage, or grant a security interest in, or where used as a noun, a sale, assignment, conveyance, or other disposition of any interest by operation of law or otherwise.
- nn. "United States" shall mean the United States of America and each department, agency, and instrumentality of the United States, including EPA.
- oo. "Waste Material" shall mean (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); and (3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27).
- pp. "Work" shall mean all activities and obligations SDs are required to perform under this Consent Decree, except the activities required under Section XX (Retention of Records).

V. GENERAL PROVISIONS

5. **Objectives of the Parties.** The objectives of the Parties in entering into this Consent Decree are to protect public health or welfare or the environment by the design and implementation of response actions at the Site by SDs, to pay response costs of the United States, and to resolve the claims of the United States against SDs as provided in this Consent Decree.

6. Commitments by Settling Defendants.

a. SDs shall finance and perform the Work in accordance with this Consent Decree and all deliverables developed by SDs and approved or modified by EPA pursuant to this Consent Decree. SDs shall pay the United States for its response costs as provided in this Consent Decree.

b. The obligations of SDs to finance and perform the Work, including obligations to pay amounts due under this Consent Decree, are joint and several. In the event of the insolvency of any SD or the failure by any SD to implement any requirement of this Consent Decree, and EPA shall be entitled and obligated to access such SD's Financial Assurance under Section IX ("Financial Assurance") and shall make such funds available to the remaining SDs to facilitate the completion of the Work as provided in ¶ 27 and the remaining SDs shall complete all such requirements.

7. Compliance With Applicable Law. Nothing in this Consent Decree limits SDs' obligations to comply with the requirements of all applicable federal and state laws and regulations. SDs must also comply with all applicable or relevant and appropriate requirements of all federal and state environmental laws as set forth in the ROD and the SOW. The activities conducted pursuant to this Consent Decree, if approved by EPA, shall be deemed to be consistent with the NCP.

8. Permits.

a. As provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), and Section 300.400(e) of the NCP, no permit shall be required for any portion of the Work conducted entirely on-site (i.e., within the areal extent of contamination or in very close proximity to the contamination and necessary for implementation of the Work). Where any portion of the Work that is not on-site requires a federal or state permit or approval, SDs shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals.

b. SDs may seek relief under the provisions of Section XIII (Force Majeure) for any delay in the performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit or approval referenced in ¶ 8.a and required for the Work, provided that they have submitted timely and complete applications and taken all other actions necessary to obtain all such permits or approvals.

c. This Consent Decree is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

VI. PERFORMANCE OF THE WORK

9. Coordination and Supervision.

a. Project Coordinator.

(1) SDs' Project Coordinator must have sufficient technical expertise to coordinate the Work. SDs' Project Coordinator may not be an attorney representing any SD in this matter and may not act as the Supervising Contractor. SDs' Project Coordinator may assign other representatives, including other contractors, to assist in coordinating the Work.

(2) EPA shall designate and notify the SDs of EPA's Project Coordinator and Alternate Project Coordinator. EPA may designate other representatives, which may include its employees, contractors and/or consultants, to oversee the Work. EPA's Project Coordinator/Alternate Project Coordinator will have the same authority as a remedial project manager and/or an on-scene coordinator, as described in the NCP. This includes the authority to halt the Work and/or to conduct or direct any necessary response action when he or she determines that conditions at the Site constitute an emergency or may present an immediate threat to public health or welfare or the environment due to a release or threatened release of Waste Material.

(3) SDs' Project Coordinator shall meet with EPA's Project Coordinator at least monthly.

b. **Supervising Contractor.** SDs' proposed Supervising Contractor must have sufficient technical expertise to supervise the Work and a quality assurance system that complies with ANSI/ASQC E4-2004, Quality Systems for Environmental Data and Technology Programs: Requirements with Guidance for Use (American National Standard).

c. **Procedures for Disapproval/Notice to Proceed.**

(1) SDs shall designate, and notify EPA, within 10 days after the Effective Date, of the name, contact information, and qualifications of the SDs' proposed Project Coordinator and Supervising Contractor.

(2) EPA, after a reasonable opportunity for review and comment by the State, shall issue notices of disapproval and/or authorizations to proceed regarding the proposed Project Coordinator and Supervising Contractor, as applicable. If EPA issues a notice of disapproval, SDs shall, within 30 days, submit to EPA a list of supplemental proposed Project Coordinators and/or Supervising Contractors, as applicable, including a description of the qualifications of each. EPA shall issue a notice of disapproval or authorization to proceed regarding each supplemental proposed coordinator and/or contractor. SDs may select any coordinator/contractor covered by an authorization to proceed and shall, within 21 days, notify EPA of SDs' selection.

(3) SDs may change their Project Coordinator and/or Supervising Contractor, as applicable, by following the procedures of §§ 9.c(1) and 9.c(2).

(4) Notwithstanding the procedures of §§ 9.c(1) through 9.c(3), SDs have proposed, and EPA has authorized SDs to proceed, regarding the following Project Coordinator and Supervising Contractor: **[insert name and contact information]**.

10. **Performance of Work in Accordance with SOW.** SDs shall: (a) develop the RD; (b) perform the RA; and (c) operate, maintain, and monitor the effectiveness of the RA; all in accordance with the SOW and all EPA-approved, conditionally-approved, or modified deliverables as required by the SOW. All deliverables required to be submitted for approval under the CD or SOW shall be subject to approval by EPA in accordance with § 6.6 (Approval of Deliverables) of the SOW.

11. **Emergencies and Releases.** SDs shall comply with the emergency and release response and reporting requirements under § 4.3 (Emergency Response and Reporting) of the SOW. Subject to Section XVI (Covenants by the United States), nothing in this CD, including § 4.3 of the SOW, limits any authority of the United States: (a) to take all appropriate action to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site, or (b) to direct or order such action, or seek an order from the Court, to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site. If, due to SDs' failure to take appropriate response action under § 4.3 of the SOW, EPA takes such action instead, SDs shall reimburse EPA under Section X (Payments for Response Costs) for all costs of the response action.

12. **Community Involvement.** If requested by EPA, SDs shall conduct community involvement activities under EPA's oversight as provided for in, and in accordance with, Section 2 (Community Involvement) of the SOW. Such activities may include, but are not limited to, designation of a Community Involvement Coordinator and implementation of a technical assistance plan. Costs incurred by the United States under this Section constitute Future Response Costs to be reimbursed under Section X (Payments for Response Costs).

13. **Modification of SOW or Related Deliverables.**

a. If EPA determines that it is necessary to modify the work specified in the SOW and/or in deliverables developed under the SOW in order to achieve and/or maintain the Performance Standards or to carry out and maintain the effectiveness of the RA, and such modification is consistent with the Scope of the Remedy set forth in § 1.3 of the SOW, then EPA may notify SDs of such modification. If SDs object to the modification they may, within 30 days after EPA's notification, seek dispute resolution under Section XIV.

b. The SOW and/or related work plans shall be modified: (1) in accordance with the modification issued by EPA; or (2) if SDs invoke dispute resolution, in accordance with the final resolution of the dispute. The modification shall be incorporated into and enforceable under this CD, and SDs shall implement all work required by such modification. SDs shall incorporate the modification into the deliverable required under the SOW, as appropriate.

c. Nothing in this Paragraph shall be construed to limit EPA's authority to require performance of further response actions as otherwise provided in this CD.

14. Nothing in this CD, the SOW, or any deliverable required under the SOW constitutes a warranty or representation of any kind by the United States that compliance with the work requirements set forth in the SOW or related deliverable will achieve the Performance Standards.

VII. REMEDY REVIEW

15. **Periodic Review.** SDs shall conduct, in accordance with ¶ 6.7(j) (Periodic Review Support Plan) of the SOW, studies and investigations to support EPA's reviews under Section 121(c) of CERCLA, 42 U.S.C. § 9621(c), and applicable regulations, of whether the RA is protective of human health and the environment.

VIII. PROPERTY REQUIREMENTS

16. **Agreements Regarding Access and Non-Interference.** SDs shall, with respect to any Non-Settling Owner's Affected Property, use best efforts to secure from such Non-Settling Owner an agreement, enforceable by SDs and by the United States, providing that such Non-Settling Owner, and Owner SD shall, with respect to Owner SDs' Affected Property: (i) provide the United States and the other SDs, and their representatives, contractors, and subcontractors with access at all reasonable times to such Affected Property to conduct any activity regarding the CD, including those listed in ¶ 16.a. (Access Requirements); and (ii) refrain from using such Affected Property in any manner that EPA determines will pose an unacceptable risk to human health or to the environment due to exposure to Waste Material, or interfere with or adversely affect the implementation, integrity, or protectiveness of the Remedial Action, including the restrictions listed in ¶ 16.b (Land, Water, or Other Resource Use Restrictions).

a. **Access Requirements.** The following is a list of activities for which access is required regarding the Affected Property:

- (1) Monitoring the Work;
- (2) Verifying any data or information submitted to the United States;
- (3) Conducting investigations regarding contamination at or near the Site;
- (4) Obtaining samples;
- (5) Assessing the need for, planning, or implementing additional response actions at or near the Site;

- (6) Assessing implementation of quality assurance and quality control practices as defined in the approved construction quality assurance quality control plan as provided in the SOW;
- (7) Implementing the Work pursuant to the conditions set forth in ¶ 70 (Work Takeover);
- (8) Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by SDs or their agents, consistent with Section XIX (Access to Information);
- (9) Assessing SDs' compliance with the CD;
- (10) Determining whether the Affected Property is being used in a manner that is prohibited or restricted, or that may need to be prohibited or restricted under the CD; and
- (11) Implementing, monitoring, maintaining, reporting on, and enforcing any land, water, or other resource use restrictions and Institutional Controls.

b. **Land, Water, or Other Resource Use Restrictions.** The following is a list of land, water, or other resource use restrictions applicable to the Affected Property:

- (1) Prohibiting the following activities which could interfere with the RA: Digging in, through or otherwise disturbing caps and covers installed at the Site;
- (2) Prohibiting use of contaminated groundwater;
- (3) Prohibiting the following activities which could result in exposure to contaminants in subsurface soils and groundwater: Digging in, through or otherwise disturbing caps and covers installed at the Site;
- (4) Ensuring that any new structures on the Site will not be constructed in the following manner which could interfere with the RA: constructing a structure that covers or otherwise interferes with Work; and
- (5) Ensuring that any new structures on the Site will be constructed in a manner which will minimize potential risk of inhalation of contaminants.

17. **Best Efforts.** As used in this Section, “best efforts” means the efforts that a reasonable person in the position of SDs would use so as to achieve the goal in a timely manner, including the cost of employing professional assistance and the payment of reasonable sums of money to secure access and/or use restriction agreements. If SDs are unable to accomplish what is required through “best efforts” in a timely manner, they shall notify the United States, and include a description of the steps taken to comply with the requirements. If the United States deems it appropriate, it may assist SDs, or take independent action, in obtaining such access and/or use restrictions. All costs incurred by the United States in providing such assistance or taking such action, including the cost of attorney time and the amount of monetary consideration or just compensation paid, constitute Future Response Costs to be reimbursed under Section X (Payments for Response Costs).

18. Owner SDs shall not Transfer its Affected Property without first securing EPA’s approval of, and transferee’s consent to, an agreement that: (i) is enforceable by SDs and the United States; and (ii) requires the transferee to provide access to and to refrain from using the Affected Property to the same extent as is provided under ¶ 16.

19. In the event of any Transfer of the Affected Property, unless the United States otherwise consents in writing, SDs shall continue to comply with their obligations under the CD, including their obligation to provide and/or secure access, to implement, maintain, monitor, and report on Institutional Controls, and to abide by such Institutional Controls.

20. If EPA determines in a decision document prepared in accordance with the NCP that Institutional Controls in the form of state or local laws, regulations, ordinances, zoning restrictions, or other governmental controls or notices are needed, SDs shall cooperate with EPA’s efforts to secure and ensure compliance with such Institutional Controls.

21. Notwithstanding any provision of the CD, the United States retains all of its access authorities and rights, as well as all of its rights to require Institutional Controls, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statute or regulations.

IX. FINANCIAL ASSURANCE

22. In order to ensure completion of the Work, SDs shall secure financial assurance, initially in the amount of \$18,000,000 (“Estimated Cost of the Work”), for the benefit of EPA. The financial assurance must be one or more of the mechanisms listed below, in a form substantially identical to the relevant sample documents available from the “Financial Assurance” category on the Cleanup Enforcement Model Language and Sample Documents Database at <http://cfpub.epa.gov/compliance/models/>, and satisfactory to EPA. SDs may use multiple mechanisms if they are limited to surety bonds guaranteeing payment, letters of credit, and/or trust funds.

a. A surety bond guaranteeing payment and/or performance of the Work that is issued by a surety company among those listed as acceptable sureties on federal bonds as set forth in Circular 570 of the U.S. Department of the Treasury;

b. An irrevocable letter of credit, payable to or at the direction of EPA, that is issued by an entity that has the authority to issue letters of credit and whose letter-of-credit operations are regulated and examined by a federal or state agency; or

c. A trust fund established for the benefit of EPA that is administered by a trustee that has the authority to act as a trustee and whose trust operations are regulated and examined by a federal or state agency.

23. SDs have selected, and EPA has found satisfactory, as initial financial assurance a [insert type] prepared in accordance with ¶ 22 and totaling the Estimated Cost of the Work above. Within 30 days after the Effective Date, or 30 days after EPA's approval of the form and substance of SDs' financial assurance, whichever is later, SDs shall secure all executed and/or otherwise finalized mechanisms or other documents consistent with the EPA-approved form of financial assurance and shall submit such mechanisms and documents to the Regional Financial Management Officer, to the United States, and to EPA as specified in Section XXI (Notices and Submissions).

24. SDs shall diligently monitor the adequacy of the financial assurance. If any SD becomes aware of any information indicating that the financial assurance provided under this Section is inadequate or otherwise no longer satisfies the requirements of this Section, such SD shall notify EPA of such information within 7 days. If EPA determines that the financial assurance provided under this Section is inadequate or otherwise no longer satisfies the requirements of this Section, EPA will notify the affected SD of such determination. SDs shall, within 30 days after notifying EPA or receiving notice from EPA under this Paragraph, secure and submit to EPA for approval a proposal for a revised or alternative financial assurance mechanism that satisfies the requirements of this Section. EPA may extend this deadline for such time as is reasonably necessary for the affected SD, in the exercise of due diligence, to secure and submit to EPA a proposal for a revised or alternative financial assurance mechanism, not to exceed 60 days. SDs shall follow the procedures of ¶ 28 (Modification of Amount, Form, or Terms of Financial Assurance) in seeking approval of, and submitting documentation for, the revised or alternative financial assurance mechanism. SDs' inability to secure and submit to EPA financial assurance in accordance with this Section shall in no way excuse performance of any other requirements of this CD, including, without limitation, the obligation of SDs to complete the Work in accordance with the terms of this CD.

25. Access to Financial Assurance by EPA.

a. If EPA issues a notice of implementation of a Work Takeover under ¶ 70.b., then, in accordance with any applicable financial assurance mechanism, EPA is entitled

to: (1) the performance of the Work; and/or (2) require that any funds guaranteed be paid in accordance with ¶ 25.d.

b. If EPA is notified by the issuer of a financial assurance mechanism that it intends to cancel such mechanism, and the affected SD fails to provide an alternative financial assurance mechanism in accordance with this Section at least 30 days prior to the cancellation date, the funds guaranteed under such mechanism must be paid prior to cancellation in accordance with ¶ 25.d.

c. If, upon issuance of a notice of implementation of a Work Takeover under ¶ 70.b., EPA is unable for any reason to promptly secure the resources guaranteed under any applicable financial assurance mechanism, whether in cash or in kind, to continue and complete the Work, then EPA may demand an amount, as determined by EPA, sufficient to cover the cost of the remaining Work to be performed. SDs shall, within 30 days of such demand, pay the amount demanded as directed by EPA.

d. Any amounts required to be paid under this ¶ 25 shall be, as directed by EPA: (i) paid to EPA in order to facilitate the completion of the Work by EPA or by another person; or (ii) deposited into an interest-bearing account, established at a duly chartered bank or trust company that is insured by the FDIC, in order to facilitate the completion of the Work by another person. If payment is made to EPA, EPA may deposit the payment into the EPA Hazardous Substance Superfund or into the Sauget Area 2 Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

26. All EPA Work Takeover costs not paid under ¶ 25 must be reimbursed as Future Response Costs under Section X (Payments for Response Costs).

27. **Access to Financial Assurance by SDs.** In the event of the insolvency of any SD or the failure by any SD to implement any requirement of this Consent Decree in the absence of a Work Takeover, then, in accordance with any applicable financial assurance mechanism, EPA shall require that any funds guaranteed be paid and deposited into the Sauget Area 2 Remediation Account to be disbursed to the remaining SDs in accordance with Section XI. At the same time, the remaining SDs shall increase the amount of their Financial Assurance under ¶ 22 in order to total the estimated cost of the Work remaining at that time.

28. **Modification of Amount, Form, or Terms of Financial Assurance.** SDs may submit, on any anniversary of the Effective Date or at any other time agreed to by the Parties, a request to reduce the amount, or change the form or terms, of the financial assurance mechanism. Any such request must be submitted to EPA in accordance with ¶ 233, and must include an estimate of the cost of the remaining Work, an explanation of the bases for the cost calculation, and a description of the proposed changes, if any, to the form or terms of the financial assurance.

EPA will notify SDs of its decision to approve or disapprove a requested reduction or change pursuant to this Paragraph. SDs may reduce the amount of the financial assurance mechanism only in accordance with: (a) EPA's approval; or (b) if there is a dispute, the agreement, final administrative decision, or final judicial decision resolving such dispute under Section XIV (Dispute Resolution). Any decision made by EPA on a request submitted under this Paragraph to change the form or terms of a financial assurance mechanism shall be made in EPA's sole and unreviewable discretion, and such decision shall not be subject to challenge by SDs pursuant to the dispute resolution provisions of this CD or in any other forum. Within 30 days after receipt of EPA's approval of, or the agreement or decision resolving a dispute relating to, the requested modifications pursuant to this Paragraph, SDs shall submit to EPA documentation of the reduced, revised, or alternative financial assurance mechanism in accordance with ¶ 23.

29. **Release, Cancellation, or Discontinuation of Financial Assurance.** SDs may release, cancel, or discontinue any financial assurance provided under this Section only: (a) if EPA issues a Certification of Work Completion under ¶ 4.7 (Certification of Work Completion) of the SOW; (b) in accordance with EPA's approval of such release, cancellation, or discontinuation; or (c) if there is a dispute regarding the release, cancellation or discontinuance of any financial assurance, in accordance with the agreement, final administrative decision, or final judicial decision resolving such dispute under Section XIV (Dispute Resolution).

X. PAYMENTS FOR RESPONSE COSTS

30. Payment by SDs for United States' Past Response Costs.

a. Within 45 days after the Effective Date, SDs shall pay to EPA \$1,180,044 in payment for Past Response Costs. Payment shall be made in accordance with ¶ 32.a (instructions for past response cost payments).

b. **Deposit of Past Response Costs Payment.** The total amount to be paid by Setting Defendants pursuant to ¶ 30.a shall be deposited by EPA in the Sauget Area 2 Special Account to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

31. **Payments by SDs for Future Response Costs.** SDs shall pay to EPA all Future Response Costs not inconsistent with the NCP.

a. On a periodic basis, EPA will send SDs a bill requiring payment that includes an Itemized Cost Summary, which includes direct and indirect costs incurred by EPA, its contractors, subcontractors, and DOJ and separately identifies the amount of Future Oversight Costs incurred. EPA will make reasonable efforts to send SDs this bill at least every 18 months. SDs shall make all payments within 45 days after SDs' receipt of each bill requiring payment, except as otherwise provided in ¶ 33, in accordance with ¶ 32.b (instructions for future response cost payments).

b. **Deposit of Future Response Costs Payments.** The total amount to be paid by SDs pursuant to ¶ 31.a. shall be deposited by EPA in the Sauget Area 2 Special Account to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund, provided, however, that EPA may deposit a Future Response Costs payment directly into the EPA Hazardous Substance Superfund if, at the time the payment is received, EPA estimates that the Sauget Area 2 Special Account balance is sufficient to address currently anticipated future response actions to be conducted or financed by EPA at or in connection with the Site. Any decision by EPA to deposit a Future Response Costs payment directly into the EPA Hazardous Substance Superfund for this reason shall not be subject to challenge by SDs pursuant to the dispute resolution provisions of this CD or in any other forum.

32. **Payment Instructions for SDs.**

a. **Past Response Costs Payments.**

(1) The Financial Litigation Unit (“FLU”) of the United States Attorney’s Office for the Southern District of Illinois shall provide SDs, in accordance with ¶ 92, with instructions regarding making payments to DOJ on behalf of EPA. The instructions must include a Consolidated Debt Collection System (“CDCS”) number to identify payments made under this CD.

(2) For all payments subject to this ¶ 32.a, SDs shall make such payment by Fedwire Electronic Funds Transfer (“EFT”) [or, alternatively, at <https://www.pay.gov>] to the U.S. DOJ account, in accordance with the instructions provided under ¶ 32.a(1), and including references to the CDCS Number, Site/Spill ID Number 0558, and DJ Number 90-11-2-06089/6.

(3) For each payment made under this ¶ 32.a, SDs shall send notices, including references to the CDCS, Site/Spill ID, and DJ numbers, to the United States, EPA, and the EPA Cincinnati Finance Center, all in accordance with ¶ 92.

b. **Future Response Costs Payments and Stipulated Penalties.**

(1) For all payments subject to this ¶ 32.b, SDs shall make such payment by Fedwire EFT, referencing the Site/Spill ID and DJ numbers. The Fedwire EFT payment must be sent as follows:

Federal Reserve Bank of New York
ABA = 021030004
Account = 68010727
SWIFT address = FRNYUS33
33 Liberty Street
New York NY 10045
Field Tag 4200 of the Fedwire message should read
"D 68010727 Environmental Protection Agency"

(2) For all payments made under this ¶ 32.b, SDs must include references to the Site/Spill ID and DJ numbers. At the time of any payment required to be made in accordance with ¶ 32.b, SDs shall send notices that payment has been made to the United States, EPA, and the EPA Cincinnati Finance Center, all in accordance with ¶ 92. All notices must include references to the Site/Spill ID and DJ numbers.

33. **Contesting Future Response Costs.** SDs may submit a Notice of Dispute, initiating the procedures of Section XIV (Dispute Resolution), regarding any Future Response Costs billed under ¶ 31 (Payments by SDs for Future Response Costs) if they determine that EPA has made a mathematical error or included a cost item that is not within the definition of Future Response Costs, or if they believe EPA incurred excess costs as a direct result of an EPA action that was inconsistent with a specific provision or provisions of the NCP. Such Notice of Dispute shall be submitted in writing within 30 days after receipt of the bill and must be sent to the United States pursuant to Section XXI (Notices and Submissions). Such Notice of Dispute shall specifically identify the contested Future Response Costs and the basis for objection. If SDs submit a Notice of Dispute, SDs shall pay all uncontested Future Response Costs to the United States within 45 days after SDs' receipt of the bill requiring payment. Within 30 days after such payment, if informal dispute resolution has not resolved the dispute, SDs shall establish, in a duly chartered bank or trust company, an interest-bearing account that is insured by the Federal Deposit Insurance Corporation (FDIC), and remit to that account funds equivalent to the amount of the contested Future Response Costs. SDs shall send to the United States, as provided in Section XXI (Notices and Submissions), a copy of the transmittal letter and check or evidence of the Fedwire EFT paying the uncontested Future Response Costs, and a copy of the correspondence that establishes and funds the account, including, but not limited to, information containing the identity of the bank and bank account under which the account is established as well as a bank statement showing the initial balance of the account. If the United States prevails in the dispute, SDs shall pay the sums due (with accrued interest) to the United States within 7 days after the resolution of the dispute. If SDs prevail concerning any aspect of the contested costs, SDs shall pay that portion of the costs (plus associated accrued interest) for which they did not prevail to the United States within 7 days after the resolution of the dispute. SDs shall be

disbursed any balance of the account. All payments to the United States under this Paragraph shall be made in accordance with ¶ 32.b (instructions for future response cost payments). The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XIV (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding SDs' obligation to reimburse the United States for its Future Response Costs.

34. **Interest.** In the event that any payment for Past Response Costs or for Future Response Costs required under this Section is not made by the date required, SDs shall pay Interest on the unpaid balance. The Interest on Past Response Costs under this Paragraph shall begin to accrue on the Effective Date. The Interest on Future Response Costs shall begin to accrue on the date of the bill. The Interest shall accrue through the date of SDs' payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of SDs' failure to make timely payments under this Section including, but not limited to, payment of stipulated penalties pursuant to ¶ 57 (Stipulated Penalty Amounts – Work).

XI. DISBURSEMENT OF SPECIAL ACCOUNT FUNDS

35. **Creation of Sauget Area 2 Remediation Account and Agreement to Disburse Funds to SDs.** EPA established the Sauget Area 2 Remediation Account pursuant to Paragraph 9.b. of the consent decree entered on December 15, 2009, between the United States and Defendants in *United States v. Pharmacia Corp., et al.*, Civil Action No. 99-063 (S.D. Ill.). Subject to the terms and conditions set forth in this Section, EPA agrees to make the funds in the Sauget Area 2 Remediation Account, including Interest Earned on the funds in the Sauget Area 2 Remediation Account, available for disbursement to SDs as partial reimbursement for performance of the Work. EPA shall disburse funds from the Sauget Area 2 Remediation Account to SDs in accordance with the procedures and milestones for phased disbursement set forth in this Section.

36. **Timing, Amount, and Method of Disbursing Funds From the Sauget Area 2 Remediation Account.** Within 45 days after EPA's receipt of a Cost Summary and Certification, as defined by ¶ 37.b, or if EPA has requested additional information under ¶ 37.b or a revised Cost Summary and Certification under ¶ 37.c, within 45 days after receipt of the additional information or revised Cost Summary and Certification, and subject to the conditions set forth in this Section, EPA shall disburse the funds from the Sauget Area 2 Remediation Account at the completion of the following milestones, and in the amounts set forth below:

Milestone	Disbursement of Funds
EPA approval of RD Work Plan	25% of funds from the Sauget Area 2 Remediation Account
EPA issuance of Notice of Authorization to Proceed with RA	50% of remaining funds from the Sauget Area 2 Remediation Account
EPA Notice of RA Construction Completion	Remainder of funds in the Sauget Area 2 Remediation Account

EPA shall disburse the funds from the Sauget Area 2 Remediation Account to SDs pursuant to instructions provided by SDs in the Cost Summary and Certification.

37. Requests for Disbursement of Special Account Funds.

a. Within 60 days after issuance of EPA's written confirmation that a milestone of the Work, as defined in ¶ 36 (Timing, Amount, and Method of Disbursing Funds), has been satisfactorily completed, SDs shall submit to EPA a Cost Summary and Certification, as defined in ¶ 37.b, covering the Work performed up to the date of completion of that milestone. SDs shall not include in any submission costs included in a previous Cost Summary and Certification following completion of an earlier milestone of the Work if those costs have been previously sought or reimbursed pursuant to ¶ 36.

b. Each Cost Summary and Certification shall include a complete and accurate written cost summary and certification of the necessary costs incurred and paid by SDs for the Work covered by the particular submission, excluding costs not eligible for disbursement under ¶ 38 (Costs Excluded from Disbursement). Each Cost Summary and Certification shall contain the following statement signed by the Chief Financial Officer of a SD:

To the best of my knowledge, after thorough investigation and review of SDs' documentation of costs incurred and paid for Work performed pursuant to this CD [insert, as appropriate: "up to the date of completion of milestone 1," "between the date of completion of milestone 1 and the date of completion of milestone 2," or "between the date of completion of milestone 2 and the date of completion of the milestone 3,"] I certify that the information contained in or accompanying this submission is true, accurate, and complete. I am aware that there are significant penalties for knowingly submitting false information, including the possibility of fine and imprisonment.

The Chief Financial Officer of a SD shall also provide EPA a list of the documents that he or she reviewed in support of the Cost Summary and Certification. Upon request by EPA, SDs shall submit to EPA any additional information that EPA deems necessary for its review and approval of a Cost Summary and Certification.

c. If EPA finds that a Cost Summary and Certification includes a mathematical error, costs excluded under ¶ 38 (Costs Excluded from Disbursement), costs that are inadequately documented, or costs submitted in a prior Cost Summary and Certification, it will notify SDs and provide them an opportunity to cure the deficiency by submitting a revised

Cost Summary and Certification. If SDs fail to cure the deficiency within 30 days after being notified of, and given the opportunity to cure, the deficiency, EPA will recalculate SDs' costs eligible for disbursement for that submission and disburse the corrected amount to SDs in accordance with the procedures in ¶ 36 (Timing, Amount, and Method of Disbursing Funds from Sauget Area 2 Remediation Account). SDs may dispute EPA's recalculation under this Paragraph pursuant to Section XIV (Dispute Resolution). In no event shall SDs be disbursed funds from the Sauget Area 2 Remediation Account in excess of amounts properly documented in a Cost Summary and Certification accepted or modified by EPA.

38. **Costs Excluded from Disbursement.** The following costs are excluded from, and shall not be sought by SDs for, disbursement from the Sauget Area 2 Remediation Account: (a) response costs paid pursuant to Section X (Payments for Response Costs); (b) any other payments made by SDs to the United States pursuant to this CD, including, but not limited to, any interest or stipulated penalties paid pursuant to Section X (Payments for Response Costs) or XV (Stipulated Penalties); (c) attorneys' fees and costs, except for reasonable attorneys' fees and costs necessarily related to any Work under the SOW for which legal services are essential, such as obtaining access or institutional controls as required by Section VIII (Property Requirements); (d) costs of any response activities SDs perform that are not required under, or approved by EPA pursuant to, this CD; (e) costs related to SDs' litigation, settlement, development of potential contribution claims, or identification of defendants; (f) internal costs of SDs, including but not limited to, salaries, travel, or in-kind services, except for those costs that represent the work of employees of SDs directly performing the Work; (g) any costs incurred by SDs prior to the Effective Date; or (h) any costs incurred by SDs pursuant to Section XIV (Dispute Resolution).

39. **Termination of Disbursements from the Remediation Account.** EPA's obligation to disburse funds from the Sauget Area 2 Remediation Account under this CD shall terminate upon EPA's determination that SDs: (a) have knowingly submitted a materially false or misleading Cost Summary and Certification; (b) have submitted a materially inaccurate or incomplete Cost Summary and Certification, and have failed to correct the materially inaccurate or incomplete Cost Summary and Certification within 21 days after being notified of, and given the opportunity to cure, the deficiency; or (c) failed to submit a Cost Summary and Certification as required by ¶ 37 (Requests for Disbursement of Special Account Funds) within 60 days (or such longer period as EPA agrees) after being notified that EPA intends to terminate its obligation to make disbursements pursuant to this Section because of SDs' failure to submit the Cost Summary and Certification as required by ¶ 37. EPA's obligation to disburse funds from the Sauget Area 2 Remediation Account shall also terminate upon EPA's assumption of performance of any portion of the Work pursuant to ¶ 70 (Work Takeover), when such assumption of performance of the Work is not challenged by SDs or, if challenged, is upheld under Section XIV (Dispute Resolution). SDs may dispute EPA's termination of special account disbursements under Section XIV.

40. **Recapture of Remediation Account Disbursements.** Upon termination of disbursements from the Sauget Area 2 Remediation Account under ¶ 39 (Termination of

Disbursements from the Remediation Account), if EPA has previously disbursed funds from the Sauget Area 2 Remediation Account for activities specifically related to the reason for termination, e.g., discovery of a materially false or misleading submission after disbursement of funds based on that submission, EPA shall submit a bill to SDs for those amounts already disbursed from the Sauget Area 2 Remediation Account specifically related to the reason for termination, plus Interest on that amount covering the period from the date of disbursement of the funds by EPA to the date of repayment of the funds by SDs. Within 45 days after receipt of EPA's bill, SDs shall reimburse the EPA Hazardous Substance Superfund for the total amount billed. Payment shall be made in accordance with ¶ 32.b (instructions for future response cost payments). Upon receipt of payment, EPA may deposit all or any portion thereof in the Sauget Area 2 Special Account, the Sauget Area 2 Remediation Account, or the EPA Hazardous Substance Superfund. The determination of where to deposit or how to use the funds shall not be subject to challenge by SDs pursuant to the dispute resolution provisions of this CD or in any other forum. SDs may dispute EPA's determination as to recapture of funds pursuant to Section XIV (Dispute Resolution).

41. **Balance of Special Account Funds.** After EPA issues its Notice of RA Construction Completion pursuant to paragraph 4.5(f) of the SOW, and after EPA completes all disbursement to SDs in accordance with this Section, if any funds remain in the Sauget Area 2 Remediation Account, EPA may transfer such funds to the Sauget Area 2 Special Account or to the EPA Hazardous Substance Superfund. Any transfer of funds to the Sauget Area 2 Special Account or the EPA Hazardous Substance Superfund shall not be subject to challenge by SDs pursuant to the dispute resolution provisions of this CD or in any other forum. Any amounts received for the Sauget Area 2 Remediation Account from any distributions by the liquidation of the Home Insurance Company after notice of RA Construction Completion and not in excess of amounts properly documented in a Cost Summary and Certification accepted or modified by EPA shall be placed in the Sauget Area 2 Remediation Account and disbursed to the SDs pursuant to instructions provided by the SDs, unless EPA has assumed performance of any portion of the Work pursuant to ¶ 70 (Work Takeover), in which case such distribution shall be placed in the Area 1 Special Account.

XII. INDEMNIFICATION AND INSURANCE

42. SDs' Indemnification of the United States.

a. The United States does not assume any liability by entering into this CD or by virtue of any designation of SDs as EPA's authorized representatives under Section 104(e) of CERCLA, 42 U.S.C. § 9604(e). SDs shall indemnify, save, and hold harmless the United States and its officials, agents, employees, contractors, subcontractors, and representatives for or from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of SDs, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on SDs' behalf or under their control, in carrying out activities pursuant to this CD, including, but not limited to, any claims arising from any designation of SDs as EPA's authorized representatives under Section 104(e) of CERCLA. Further, SDs agree to pay the

United States all costs it incurs including, but not limited to, attorneys' fees and other expenses of litigation and settlement arising from, or on account of, claims made against the United States based on negligent or other wrongful acts or omissions of SDs, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this CD. The United States shall not be held out as a party to any contract entered into by or on behalf of SDs in carrying out activities pursuant to this CD. Neither SDs nor any such contractor shall be considered an agent of the United States.

b. The United States shall give SDs notice of any claim for which the United States plans to seek indemnification pursuant to this ¶ 42, and shall consult with SDs prior to settling such claim.

43. SDs covenant not to sue and agree not to assert any claims or causes of action against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between any one or more of SDs and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, SDs shall indemnify, save and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more of SDs and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

44. **Insurance.** No later than 15 days before commencing any on-site Work, SDs shall secure, and shall maintain until the first anniversary after issuance of EPA's Certification of RA Completion pursuant to ¶ 4.6 (Certification of RA Completion) of the SOW commercial general liability insurance with limits of \$1 million, for any one occurrence, and automobile liability insurance with limits of \$1 million, combined single limit, together with an umbrella policy with limits of \$2 million, naming the United States as an additional insured with respect to all liability arising out of the activities performed by or on behalf of SDs pursuant to this CD. In addition, for the duration of this CD, SDs shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of SDs in furtherance of this CD. Prior to commencement of the Work, SDs shall provide to EPA certificates of such insurance and a copy of each insurance policy. SDs shall resubmit such certificates each year on the anniversary of the Effective Date, but need only submit copies of coverage changes to each insurance policy. If SDs demonstrate by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering the same risks but in a lesser amount, then, with respect to that contractor or subcontractor, SDs need provide only that portion of the insurance described above that is not maintained by the contractor or subcontractor.

XIII. FORCE MAJEURE

45. "Force majeure," for purposes of this CD, is defined as any event arising from causes beyond the control of SDs, of any entity controlled by SDs, or of SDs' contractors that delays or prevents the performance of any obligation under this CD despite SDs' best efforts to fulfill the obligation. The requirement that SDs exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure and best efforts to address the effects of any potential force majeure (a) as it is occurring and (b) following the potential force majeure such that the delay and any adverse effects of the delay are minimized to the greatest extent possible. "Force majeure" does not include financial inability to complete the Work or a failure to achieve the Performance Standards.

46. If any event occurs or has occurred that may delay the performance of any obligation under this CD for which SDs intend or may intend to assert a claim of force majeure, SDs shall notify EPA's Project Coordinator orally or, in his or her absence, EPA's Alternate Project Coordinator or, in the event both of EPA's designated representatives are unavailable, the Director of the Superfund Division, EPA Region 5, within 48 hours of when SDs first knew that the event might cause a delay. Within ten (10) days thereafter, SDs shall provide in writing to EPA an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; SDs' rationale for attributing such delay to a force majeure; and a statement as to whether, in the opinion of SDs, such event may cause or contribute to an endangerment to public health or welfare, or the environment. SDs shall include with any notice all available documentation supporting their claim that the delay was attributable to a force majeure. SDs shall be deemed to know of any circumstance of which SDs, any entity controlled by SDs, or SDs' contractors or subcontractors knew or should have known. Failure to comply with the above requirements regarding an event shall preclude SDs from asserting any claim of force majeure regarding that event, provided, however, that if EPA, despite the late or incomplete notice, is able to assess to its satisfaction whether the event is a force majeure under ¶ 45 and whether SDs have exercised their best efforts under ¶ 45, EPA may, in its unreviewable discretion, excuse in writing SDs' failure to submit timely or complete notices under this Paragraph.

47. If EPA agrees that the delay or anticipated delay is attributable to a force majeure, the time for performance of the obligations under this CD that are affected by the force majeure will be extended by EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or anticipated delay has been or will be caused by a force majeure, EPA will notify SDs in writing of its decision. If EPA agrees that the delay is attributable to a force majeure, EPA will notify SDs in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure.

48. If SDs elect to invoke the dispute resolution procedures set forth in Section XIV (Dispute Resolution) regarding EPA's decision, they shall do so no later than 15 days after

receipt of EPA's notice. In any such proceeding, SDs shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that SDs complied with the requirements of ¶¶ 45 and 46. If SDs carry this burden, the delay at issue shall be deemed not to be a violation by SDs of the affected obligation of this CD identified to EPA and the Court.

49. The failure by EPA to timely complete any obligation under the CD or under the SOW is not a violation of the CD, provided, however, that if such failure prevents SDs from meeting one or more deadlines in the SOW, SDs may seek relief under this Section.

XIV. DISPUTE RESOLUTION

50. Unless otherwise expressly provided for in this CD, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes regarding this CD. However, the procedures set forth in this Section shall not apply to actions by the United States to enforce obligations of SDs that have not been disputed in accordance with this Section.

51. A dispute shall be considered to have arisen when one party sends the other parties a written Notice of Dispute. Any dispute regarding this CD shall in the first instance be the subject of informal negotiations between the parties to the dispute. The period for informal negotiations shall not exceed 20 days from the time the dispute arises, unless it is modified by written agreement of the parties to the dispute.

52. Statements of Position.

a. In the event that the parties cannot resolve a dispute by informal negotiations under the preceding Paragraph, then the position advanced by EPA shall be considered binding unless, within 30 days after the conclusion of the informal negotiation period, SDs invoke the formal dispute resolution procedures of this Section by serving on the United States a written Statement of Position on the matter in dispute, including, but not limited to, any factual data, analysis, or opinion supporting that position and any supporting documentation relied upon by SDs. The Statement of Position shall specify SDs' position as to whether formal dispute resolution should proceed under ¶ 53 (Record Review) or ¶ 54.

b. Within 30 days after receipt of SDs' Statement of Position, EPA will serve on SDs its Statement of Position, including, but not limited to, any factual data, analysis, or opinion supporting that position and all supporting documentation relied upon by EPA. EPA's Statement of Position shall include a statement as to whether formal dispute resolution should proceed under ¶ 53 (Record Review) or ¶ 54. Within 30 days after receipt of EPA's Statement of Position, SDs may submit a Reply.

c. If there is disagreement between EPA and SDs as to whether dispute resolution should proceed under ¶ 53 (Record Review) or ¶ 54, the parties to the dispute shall

follow the procedures set forth in the Paragraph determined by EPA to be applicable. However, if SDs ultimately appeal to the Court to resolve the dispute, the Court shall determine which paragraph is applicable in accordance with the standards of applicability set forth in ¶¶ 53 and 54.

53. **Record Review.** Formal dispute resolution for disputes pertaining to the selection or adequacy of any response action and all other disputes that are accorded review on the administrative record under applicable principles of administrative law shall be conducted pursuant to the procedures set forth in this Paragraph. For purposes of this Paragraph, the adequacy of any response action includes, without limitation, the adequacy or appropriateness of plans, procedures to implement plans, or any other items requiring approval by EPA under this CD, and the adequacy of the performance of response actions taken pursuant to this CD. Nothing in this CD shall be construed to allow any dispute by SDs regarding the validity of the ROD's provisions.

a. An administrative record of the dispute shall be maintained by EPA and shall contain all statements of position, including supporting documentation, submitted pursuant to this Section. Where appropriate, EPA may allow submission of supplemental statements of position by the parties to the dispute.

b. The Director of the Superfund Division, EPA Region 5, will issue a final administrative decision resolving the dispute based on the administrative record described in ¶ 53.a. This decision shall be binding upon SDs, subject only to the right to seek judicial review pursuant to ¶¶ 53.c and 53.d.

c. Any administrative decision made by EPA pursuant to ¶ 53.b shall be reviewable by this Court, provided that a motion for judicial review of the decision is filed by SDs with the Court and served on all Parties within 20 days after receipt of EPA's decision. The motion shall include a description of the matter in dispute, the efforts made by the parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of this CD. The United States may file a response to SDs' motion.

d. In proceedings on any dispute governed by this Paragraph, SDs shall have the burden of demonstrating that the decision of the Superfund Division Director is arbitrary and capricious or otherwise not in accordance with law. Judicial review of EPA's decision shall be on the administrative record compiled pursuant to ¶ 53.a.

54. Formal dispute resolution for disputes that neither pertain to the selection or adequacy of any response action nor are otherwise accorded review on the administrative record under applicable principles of administrative law, shall be governed by this Paragraph.

a. The Director of the Superfund Division, EPA Region 5, will issue a final decision resolving the dispute based on the statements of position and reply, if any, served under ¶ 52. The Superfund Division Director's decision shall be binding on SDs unless, within 20 days after receipt of the decision, SDs file with the Court and serve on the parties a motion for judicial

review of the decision setting forth the matter in dispute, the efforts made by the parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of the CD. The United States may file a response to SDs' motion.

b. Notwithstanding ¶ BB (CERCLA § 113(j) record review of ROD and Work) of Section I (Background), judicial review of any dispute governed by this Paragraph shall be governed by applicable principles of law.

55. The invocation of formal dispute resolution procedures under this Section does not extend, postpone, or affect in any way any obligation of SDs under this CD, except as provided in ¶ 33 (Contesting Future Response Costs), as agreed by EPA, or as determined by the Court. Stipulated penalties with respect to the disputed matter shall continue to accrue, but payment shall be stayed pending resolution of the dispute, as provided in ¶ 60. Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this CD. In the event that SDs do not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XV (Stipulated Penalties).

XV. STIPULATED PENALTIES

56. SDs shall be liable for stipulated penalties in the amounts set forth in ¶¶ 57 and 58 to the United States for failure to comply with the requirements of this CD specified below, unless excused under Section XIII (Force Majeure). "Compliance" by SDs shall include completion of all activities and obligations, including payments, required under this CD, or any deliverable approved under this CD, in accordance with all applicable requirements of law, this CD, the SOW, and any deliverables approved under this CD and within the specified time schedules established by and approved under this CD.

57. Stipulated Penalty Amounts - Work (Including Payments and Excluding Deliverables).

a. The following stipulated penalties shall accrue per violation per day for any noncompliance identified in ¶ 57.b:

Period of Noncompliance	Penalty Per Violation Per Day
1st through 14th day	\$500
15th through 30th day	\$1,500
31st day and beyond	\$2,000

b. Compliance Milestones.

(1) Failure to timely initiate Remedial Action Construction or to complete the Remedial Action;

(2) Failure to timely implement the Operation and Maintenance Plan;

(3) Failure to conduct performance monitoring as required by either the O&M Plan or the Periodic Review Support Plan;

(4) Failure to timely implement the Institutional Control Implementation and Assurance Plan;

(5) Failure to establish or maintain the required insurance pursuant to Section XII of this Consent Decree;

(6) Failure to make best efforts to obtain or to provide access or to execute the required Institutional Controls and submit them to IEPA pursuant to Section VIII of this Consent Decree;

(7) Failure to establish and maintain financial assurance in compliance with the timelines and other substantive and procedural requirements of Section IX (Financial Assurance);

(8) Failure to timely make payment of Future Response Costs pursuant to Section X of this Consent Decree; or

(9) Failure to initiate or complete any further response actions EPA selects for the Site pursuant to this Consent Decree.

58. Stipulated Penalty Amounts - Deliverables.

a. **Material Defects.** If an initially submitted or resubmitted deliverable contains a material defect, and the deliverable is disapproved or modified by EPA under ¶ 6.6(a) (Initial Submissions) or ¶ 6.6(b) (Resubmissions) of the SOW due to such material defect, then the material defect shall constitute a lack of compliance for purposes of ¶ 56. The provisions of Section XIV (Dispute Resolution) and Section XV (Stipulated Penalties) shall govern the accrual and payment of any stipulated penalties regarding SDs' submissions under this CD.

b. The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate deliverables pursuant to the CD:

Period of Noncompliance	Penalty Per Violation Per Day
1st through 14th day	\$500
15th through 30th day	\$1,250
31st day and beyond	\$2,500

59. In the event that EPA assumes performance of a portion or all of the Work pursuant to ¶ 70 (Work Takeover), SDs shall be liable for a stipulated penalty in the amount of \$1 million. Stipulated penalties under this Paragraph are in addition to the remedies available under ¶¶ 25 (Access to Financial Assurance by EPA) and 70 (Work Takeover).

60. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs and shall continue to accrue through the final day of the

correction of the noncompliance or completion of the activity. However, stipulated penalties shall not accrue: (a) with respect to a deficient submission under ¶ 6.6 (Approval of Deliverables) of the SOW, during the period, if any, beginning on the 31st day after EPA's receipt of such submission until the date that EPA notifies SDs of any deficiency; (b) with respect to a decision by the Director of the Superfund Division, EPA Region 5, under ¶ 53.b or ¶ 54.a of Section XIV (Dispute Resolution), during the period, if any, beginning on the 31st day after the date that SDs' reply to EPA's Statement of Position is received until the date that the Director issues a final decision regarding such dispute; or (c) with respect to judicial review by this Court of any dispute under Section XIV (Dispute Resolution), during the period, if any, beginning on the 31st day after the Court's receipt of the final submission regarding the dispute until the date that the Court issues a final decision regarding such dispute. Nothing in this CD shall prevent the simultaneous accrual of separate penalties for separate violations of this CD.

61. Following EPA's determination that SDs have failed to comply with a requirement of this CD, EPA may give SDs written notification of the same and describe the noncompliance. EPA may send SDs a written demand for payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether EPA has notified SDs of a violation.

62. All penalties accruing under this Section shall be due and payable to the United States within 30 days after SDs' receipt from EPA of a demand for payment of the penalties, unless SDs invoke the Dispute Resolution procedures under Section XIV (Dispute Resolution) within the 30-day period. All payments to the United States under this Section shall indicate that the payment is for stipulated penalties and shall be made in accordance with ¶ 32.b (instructions for future response cost payments).

63. Penalties shall continue to accrue as provided in ¶ 60 during any dispute resolution period, but need not be paid until the following:

a. If the dispute is resolved by agreement of the parties or by a decision of EPA that is not appealed to this Court, accrued penalties determined to be owed shall be paid to EPA within 30 days after the agreement or the receipt of EPA's decision or order;

b. If the dispute is appealed to this Court and the United States prevails in whole or in part, SDs shall pay all accrued penalties determined by the Court to be owed to EPA within 60 days after receipt of the Court's decision or order, except as provided in ¶ 63.c;

c. If the District Court's decision is appealed by any Party, SDs shall pay all accrued penalties determined by the District Court to be owed to the United States into an interest-bearing account, established at a duly chartered bank or trust company that is insured by the FDIC, within 60 days after receipt of the Court's decision or order. Penalties shall be paid into this account as they continue to accrue, at least every 60 days. Within 15 days after receipt of the final appellate court decision, the balance of the account shall be paid to EPA or to SDs to the extent that they prevail.

64. If SDs fail to pay stipulated penalties when due, SDs shall pay Interest on the unpaid stipulated penalties as follows: (a) if SDs have timely invoked dispute resolution such that the obligation to pay stipulated penalties has been stayed pending the outcome of dispute resolution, Interest shall accrue from the date stipulated penalties are due pursuant to ¶ 63 until the date of payment; and (b) if SDs fail to timely invoke dispute resolution, Interest shall accrue from the date of demand under ¶ 61 until the date of payment. If SDs fail to pay stipulated penalties and Interest when due, the United States may institute proceedings to collect the penalties and Interest.

65. The payment of penalties and Interest, if any, shall not alter in any way SDs' obligation to complete the performance of the Work required under this CD.

66. Nothing in this CD shall be construed as prohibiting, altering, or in any way limiting the ability of the United States to seek any other remedies or sanctions available by virtue of SDs' violation of this CD or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(l) of CERCLA, 42 U.S.C. § 9622(l), provided, however, that the United States shall not seek civil penalties pursuant to Section 122(l) of CERCLA for any violation for which a stipulated penalty is provided in this CD, except in the case of a willful violation of this CD.

67. Notwithstanding any other provision of this Section, the United States may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this CD.

XVI. COVENANTS BY THE UNITED STATES

68. **Covenants for SDs by United States.** Except as provided in ¶ 69 (General Reservations of Rights), the United States covenants not to sue or to take administrative action against SDs pursuant to Sections 106 and 107(a) of CERCLA for the Work, Past Response Costs, and Future Response Costs. These covenants shall take effect upon the Effective Date. These covenants are conditioned upon the satisfactory performance by SDs of their obligations under this CD. These covenants extend only to SDs and do not extend to any other person.

69. **General Reservations of Rights.** The United States reserves, and this CD is without prejudice to, all rights against SDs with respect to all matters not expressly included within the United States' covenants. Notwithstanding any other provision of this CD, the United States reserves all rights against SDs with respect to:

- a. liability for failure by SDs to meet a requirement of this CD;
- b. liability arising from the past, present, or future disposal, release, or threat of release of Waste Material outside of the Site;
- c. liability based on the ownership of the Site by SDs when such ownership commences after signature of this CD by SDs;

d. liability based on the operation of the Site by SDs when such operation commences after signature of this CD by SDs and does not arise solely from SDs' performance of the Work;

e. liability based on SDs' transportation, treatment, storage, or disposal, or arrangement for transportation, treatment, storage, or disposal of Waste Material at or in connection with the Site, other than as provided in the ROD, the Work, or otherwise ordered by EPA, after signature of this CD by SDs;

f. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;

g. criminal liability;

h. liability for violations of federal or state law that occur during or after implementation of the Work;

i. liability, prior to achievement of Performance Standards, for additional response actions that EPA determines are necessary to achieve and maintain Performance Standards or to carry out and maintain the effectiveness of the remedy set forth in the ROD, but that cannot be required pursuant to ¶ 13 (Modification of SOW or Related Deliverables);

j. liability for additional operable units at the Site or the final response action; and

k. liability for costs that the United States will incur regarding the Site but that are not within the definition of Future Response Costs.

70. Work Takeover.

a. In the event EPA determines that SDs: (1) have ceased implementation of any portion of the Work; (2) are seriously or repeatedly deficient or late in their performance of the Work; or (3) are implementing the Work in a manner that may cause an endangerment to human health or the environment, EPA may issue a written notice ("Work Takeover Notice") to SDs. Any Work Takeover Notice issued by EPA will specify the grounds upon which such notice was issued and will provide SDs a period of 10 days within which to remedy the circumstances giving rise to EPA's issuance of such notice.

b. If, after expiration of the 10-day notice period specified in ¶ 70.a, SDs have not remedied to EPA's satisfaction the circumstances giving rise to EPA's issuance of the relevant Work Takeover Notice, EPA may at any time thereafter assume the performance of all or any portion(s) of the Work as EPA deems necessary ("Work Takeover"). EPA will notify SDs in writing (which writing may be electronic) if EPA determines that implementation of a Work Takeover is warranted under this ¶ 70.b. Funding of Work Takeover costs is addressed under ¶ 25 (Access to Financial Assurance by EPA).

c. SDs may invoke the procedures set forth in ¶ 53 (Record Review), to dispute EPA's implementation of a Work Takeover under ¶ 70.b. However, notwithstanding SDs' invocation of such dispute resolution procedures, and during the pendency of any such dispute, EPA may in its sole discretion commence and continue a Work Takeover under ¶ 70.b until the earlier of (1) the date that SDs remedy, to EPA's satisfaction, the circumstances giving rise to EPA's issuance of the relevant Work Takeover Notice, or (2) the date that a final decision is rendered in accordance with ¶ 53 (Record Review) requiring EPA to terminate such Work Takeover.

71. Notwithstanding any other provision of this CD, the United States retains all authority and reserves all rights to take any and all response actions authorized by law.

XVII. COVENANTS BY SETTLING DEFENDANTS

72. **Covenants by SDs.** Subject to the reservations in ¶ 73, SDs covenant not to sue and agree not to assert any claims or causes of action against the United States with respect to the Work, past response actions regarding the Site, Past Response Costs, Future Response Costs, and this CD, including, but not limited to:

a. any direct or indirect claim for reimbursement from the EPA Hazardous Substance Superfund through CERCLA §§ 106(b)(2), 107, 111, 112 or 113, or any other provision of law;

b. any claims under CERCLA §§ 107 or 113, RCRA Section 7002(a), 42 U.S.C. § 6972(a), or state law regarding the Work, past response actions regarding the Site, Past Response Costs, Future Response Costs, and this CD; or

c. any claims arising out of response actions at or in connection with the Site, including any claim under the United States Constitution, the Illinois Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, or at common law.

d. any direct or indirect claim for disbursement from the Sauget Area 2 Special Account or Sauget Area 2 Remediation Account, except as provided in Section XI (Disbursement of Special Account Funds).

73. Except as provided in ¶¶ 76 (Waiver of Claims by SDs) and 83 (Res Judicata and Other Defenses), the covenants in this Section shall not apply if the United States brings a cause of action or issues an order pursuant to any of the reservations in Section XVI (Covenants by the United States), other than in ¶¶ 69.a (claims for failure to meet a requirement of the CD), 69.g (criminal liability), and 69.h (violations of federal/state law during or after implementation of the Work), but only to the extent that SDs' claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

74. SDs reserve, and this CD is without prejudice to, claims against the United States, subject to the provisions of Chapter 171 of Title 28 of the United States Code, and brought pursuant to any statute other than CERCLA or RCRA and for which the waiver of sovereign

immunity is found in a statute other than CERCLA or RCRA, for money damages for injury or loss of property or personal injury or death caused by the negligent or wrongful act or omission of any employee of the United States, as that term is defined in 28 U.S.C. § 2671, while acting within the scope of his or her office or employment under circumstances where the United States, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred. However, the foregoing shall not include any claim based on EPA's selection of response actions, or the oversight or approval of SDs' deliverables or activities.

75. Nothing in this CD shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

76. **Waiver of Claims by SDs.**

a. SDs agree not to assert any claims and to waive all claims or causes of action (including but not limited to claims or causes of action under Sections 107(a) and 113 of CERCLA) that they may have:

(1) ***De Micromis* Waiver.** For all matters relating to the Site against any person where the person's liability to SDs with respect to the Site is based solely on having arranged for disposal or treatment, or for transport for disposal or treatment, of hazardous substances at the Site, or having accepted for transport for disposal or treatment of hazardous substances at the Site, if all or part of the disposal, treatment, or transport occurred before April 1, 2001, and the total amount of material containing hazardous substances contributed by such person to the Site was less than 110 gallons of liquid materials or 200 pounds of solid materials;

(2) **Municipal Solid Waste ("MSW") Waiver.** For all matters relating to the Site against any person where the person's liability to SDs with respect to the Site is based solely on having arranged for disposal or treatment, or for transport for disposal or treatment, of MSW at the Site, if the volume of MSW disposed, treated, or transported by such person to the Site did not exceed 0.2% of the total volume of waste at the Site; and

b. **Exceptions to Waiver.**

(1) The waiver under this ¶ 76 shall not apply with respect to any defense, claim, or cause of action that a SD may have against any person otherwise covered by such waiver if such person asserts a claim or cause of action relating to the Site against such SD.

(2) The waiver under ¶ 76.a.(1) (*De Micromis* Waiver) shall not apply to any claim or cause of action against any person otherwise covered by such waiver if EPA determines that: (i) the materials containing hazardous substances contributed to the Site by such person contributed significantly or could contribute significantly, either

individually or in the aggregate, to the cost of the response action or natural resource restoration at the Site; or (ii) such person has failed to comply with any information request or administrative subpoena issued pursuant to Section 104(e) or 122(e)(3)(B) of CERCLA, 42 U.S.C. § 9604(e) or 9622(e)(3)(B), or Section 3007 of RCRA, 42 U.S.C. § 6927, or has impeded or is impeding, through action or inaction, the performance of a response action or natural resource restoration with respect to the Site; or if (iii) such person has been convicted of a criminal violation for the conduct to which the waiver would apply and that conviction has not been vitiated on appeal or otherwise.

(3) The waiver under ¶ 76.a.(2) (MSW Waiver) shall not apply to any claim or cause of action against any person otherwise covered by such waiver if EPA determines that: (i) the materials containing MSW contributed to the Site by such person contributed significantly or could contribute significantly, either individually or in the aggregate, to the cost of the response action or natural resource restoration at the Site; or (ii) such person has failed to comply with any information request or administrative subpoena issued pursuant to Section 104(e) or 122(e)(3)(B) of CERCLA, 42 U.S.C. § 9604(e) or 9622(e)(3)(B), or Section 3007 of RCRA, 42 U.S.C. § 6927, or has impeded or is impeding, through action or inaction, the performance of a response action or natural resource restoration with respect to the Site.

(4) The waivers under this ¶ 76 shall not apply with respect to any claim or cause of action of SDs against the insurers for Sauget & Company, Paul Sauget, and the Village of Sauget, or against Rogers Cartage Company and its insurers.

77. SDs agree not to seek judicial review of any final rule listing the Site on the NPL based on a claim that changed site conditions that resulted from the performance of the Work in any way affected the basis for listing the Site.

XVIII. EFFECT OF SETTLEMENT; CONTRIBUTION

78. Except as provided in ¶ 76 (Waiver of Claims by SDs), nothing in this CD shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this CD. Except as provided in Section XVII (Covenants by SDs), each of the Parties expressly reserves any and all rights (including, but not limited to, pursuant to Section 113 of CERCLA, 42 U.S.C. § 9613), defenses, claims, demands, and causes of action that each Party may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a Party hereto. Nothing in this CD diminishes the right of the United States, pursuant to Section 113(f)(2) and (3) of CERCLA, 42 U.S.C. § 9613(f)(2)-(3), to pursue any such persons to obtain additional response costs or response action and to enter into settlements that give rise to contribution protection pursuant to Section 113(f)(2).

79. The Parties agree, and by entering this CD this Court finds, that this CD constitutes a judicially-approved settlement pursuant to which each SD has, as of the Effective Date, resolved liability to the United States within the meaning of Section 113(f)(2) of CERCLA, 42 U.S.C. § 9613(f)(2), and is entitled, as of the Effective Date, to protection from contribution

actions or claims as provided by Section 113(f)(2) of CERCLA, or as may be otherwise provided by law, for the “matters addressed” in this CD. The “matters addressed” in this CD are the Work, Past Response Costs, and Future Response Costs.

80. The Parties further agree, and by entering this CD this Court finds, that the complaint filed by the United States in this action is a civil action within the meaning of Section 113(f)(1) of CERCLA, 42 U.S.C. § 9613(f)(1), and that this CD constitutes a judicially-approved settlement pursuant to which each SD has, as of the Effective Date, resolved liability to the United States within the meaning of Section 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B).

81. Each SD shall, with respect to any suit or claim brought by it for matters related to this CD, notify the United States in writing no later than 60 days prior to the initiation of such suit or claim. The United States is aware that Solutia and Pharmacia have been involved in litigation with the insurers for Sauget & Company, Paul Sauget, and the Village of Sauget, and with Rogers Cartage Company and its insurers and the notice requirements in this Paragraph and ¶ 82 do not apply to those suits.

82. Each SD shall, with respect to any suit or claim brought against it for matters related to this CD, notify in writing the United States within 10 days after service of the complaint on such SD. In addition, each SD shall notify the United States within 10 days after service or receipt of any Motion for Summary Judgment and within 10 days after receipt of any order from a court setting a case for trial.

83. **Res Judicata and Other Defenses.** In any subsequent administrative or judicial proceeding initiated by the United States for injunctive relief, recovery of response costs, or other appropriate relief relating to the Site, SDs shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States in the subsequent proceeding were or should have been brought in the instant case; provided, however, that nothing in this Paragraph affects the enforceability of the covenants not to sue set forth in Section XVI (Covenants by the United States).

XIX. ACCESS TO INFORMATION

84. SDs shall provide to EPA, upon request, copies of all records, reports, documents, and other information (including records, reports, documents, and other information in electronic form) (hereinafter referred to as “Records”) within SDs’ possession or control or that of their contractors or agents relating to activities at the Site or to the implementation of this CD, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information regarding the Work. SDs shall also make available to EPA, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

85. Privileged and Protected Claims.

a. SDs may assert that all or part of a Record requested by the United States is privileged or protected as provided under federal law, in lieu of providing the Record, provided SDs comply with ¶ 85.b, and except as provided in ¶ 85.c.

b. If SDs assert a claim of privilege or protection, they shall provide the United States with the following information regarding such Record: its title; its date; the name, title, affiliation (e.g., company or firm), and address of the author, of each addressee, and of each recipient; a description of the Record's contents; and the privilege or protection asserted. If a claim of privilege or protection applies only to a portion of a Record, SDs shall provide the Record to the United States in redacted form to mask the privileged or protected portion only. SDs shall retain all Records that they claim to be privileged or protected until the United States has had a reasonable opportunity to dispute the privilege or protection claim and any such dispute has been resolved in the SDs' favor.

c. SDs may make no claim of privilege or protection regarding: (1) any data regarding the Site, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, radiological or engineering data, or the portion of any other Record that evidences conditions at or around the Site; or (2) the portion of any Record that SDs are required to create or generate pursuant to this CD.

86. Business Confidential Claims. SDs may assert that all or part of a Record provided to the United States under this Section or Section XX (Retention of Records) is business confidential to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). SDs shall segregate and clearly identify all Records or parts thereof submitted under this CD for which SDs assert business confidentiality claims. Records submitted to EPA determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies Records when they are submitted to EPA, or if EPA has notified SDs that the Records are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such Records without further notice to SDs.

87. If relevant to the proceeding, the Parties agree that validated sampling or monitoring data generated in accordance with the SOW and reviewed and approved by EPA shall be admissible as evidence, without objection, in any proceeding under this CD.

88. Notwithstanding any provision of this CD, the United States retains all of its information gathering and inspection authorities and rights, including enforcement actions related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

XX. RETENTION OF RECORDS

89. Until 10 years after EPA's Certification of Work Completion under ¶ 4.7 (Certification of Work Completion) of the SOW, each SD shall preserve and retain all non-

identical copies of Records (including Records in electronic form) now in its possession or control or that come into its possession or control that relate in any manner to its liability under CERCLA with respect to the Site, provided, however, that SDs who are potentially liable as owners or operators of the Site must retain, in addition, all Records that relate to the liability of any other person under CERCLA with respect to the Site. Each SD must also retain, and instruct its contractors and agents to preserve, for the same period of time specified above all non-identical copies of the last draft or final version of any Records (including Records in electronic form) now in its possession or control or that come into its possession or control that relate in any manner to the performance of the Work, provided, however, that each SD (and its contractors and agents) must retain, in addition, copies of all data generated during the performance of the Work and not contained in the aforementioned Records required to be retained. Each of the above record retention requirements shall apply regardless of any corporate retention policy to the contrary.

90. At the conclusion of this record retention period, SDs shall notify the United States at least 90 days prior to the destruction of any such Records, and, upon request by the United States, and except as provided in ¶ 85 (Privileged and Protected Claims), SDs shall deliver any such Records to EPA.

91. Each SD certifies individually that, to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed, or otherwise disposed of any Records (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by the United States or the State and that it has fully complied with any and all EPA and State requests for information regarding the Site pursuant to Sections 104(e) and 122(e)(3)(B) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e)(3)(B), and Section 3007 of RCRA, 42 U.S.C. § 6927, and state law.

XXI. NOTICES AND SUBMISSIONS

92. All approvals, consents, deliverables, modifications, notices, notifications, objections, proposals, reports, and requests specified in this CD must be in writing unless otherwise specified. Whenever, under this CD, notice is required to be given, or a report or other document is required to be sent, by one Party to another, it must be directed to the person(s) specified below at the address(es) specified below. Any Party may change the person and/or address applicable to it by providing notice of such change to all Parties. All notices under this Section are effective upon receipt, unless otherwise specified. Notices required to be sent to EPA, and not to the United States, should not be sent to the DOJ. Except as otherwise provided, notice to a Party by email (if that option is provided below) or by regular mail in accordance with this Section satisfies any notice requirement of the CD regarding such Party.

As to the United States:

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611

Washington, D.C. 20044-7611
Re: DJ # 90-11-2-06089/6

As to EPA:

Margaret Guerriero
Acting Director, Superfund Division
U.S. Environmental Protection Agency
Region 5
77 W. Jackson Blvd.
Chicago, IL 60604-3590

and:

Michael Berkoff
EPA Project Manager
U.S. Environmental Protection Agency, Region 5
77 W. Jackson Blvd. (SR-6J)
Chicago, IL 60604-3590

As to the Regional Comptroller's
Office

Richard Hackley
U.S. Environmental Protection Agency
Region 5
77 W. Jackson Blvd. (MF-10J)
Chicago, Illinois 60604-3590

As to EPA Cincinnati Finance
Center:

EPA Cincinnati Finance Center
26 W. Martin Luther King Drive
Cincinnati, Ohio 45268
cinwd_acctsreceivable@epa.gov

As to SDs:

[Insert]

As to SDs [insert names]: [insert]

and: [insert]

XXII. RETENTION OF JURISDICTION

93. This Court retains jurisdiction over both the subject matter of this CD and SDs for the duration of the performance of the terms and provisions of this CD for the purpose of enabling any of the Parties to apply to the Court at any time for such further order, direction, and relief as may be necessary or appropriate for the construction or modification of this CD, or to effectuate or enforce compliance with its terms, or to resolve disputes in accordance with Section XIV (Dispute Resolution).

XXIII. APPENDICES

94. The following appendices are attached to and incorporated into this Consent Decree:

“Appendix A” is the description and/or map of the Site.

“Appendix B” is the ROD.

“Appendix C” is the SOW.

“Appendix D” is the complete list of SDs.

XXIV. MODIFICATION

95. Except as provided in ¶ 13 (Modification of SOW or Related Deliverables), material modifications to this CD, including the SOW, shall be in writing, signed by the United States and SDs, and shall be effective upon approval by the Court. Except as provided in ¶ 13, non-material modifications to this CD, including the SOW, shall be in writing and shall be effective when signed by duly authorized representatives of the United States and SDs. A

modification to the SOW shall be considered material if it implements a ROD amendment that fundamentally alters the basic features of the selected remedy within the meaning of 40 C.F.R. § 300.435(c)(2)(ii). Before providing its approval to any modification to the SOW, the United States will provide the State with a reasonable opportunity to review and comment on the proposed modification.

96. Nothing in this CD shall be deemed to alter the Court's power to enforce, supervise, or approve modifications to this CD.

XXV. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT

97. This CD shall be lodged with the Court for at least 30 days for public notice and comment in accordance with Section 122(d)(2) of CERCLA, 42 U.S.C. § 9622(d)(2), and 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the CD disclose facts or considerations that indicate that the CD is inappropriate, improper, or inadequate. SDs consent to the entry of this CD without further notice.

98. If for any reason the Court should decline to approve this CD in the form presented, this agreement is voidable at the sole discretion of any Party and the terms of the agreement may not be used as evidence in any litigation between the Parties.

XXVI. SIGNATORIES/SERVICE

99. Each undersigned representative of a SD to this CD and the Assistant Attorney General for the Environment and Natural Resources Division of the Department of Justice, or his or her delegee, certifies that he or she is fully authorized to enter into the terms and conditions of this CD and to execute and legally bind such Party to this document.

100. Each SD agrees not to oppose entry of this CD by this Court or to challenge any provision of this CD unless the United States has notified SDs in writing that it no longer supports entry of the CD.

101. Each SD shall identify, on the attached signature page, the name, address, and telephone number of an agent who is authorized to accept service of process by mail on behalf of that Party with respect to all matters arising under or relating to this CD. SDs agree to accept service in that manner and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure and any applicable local rules of this Court, including, but not limited to, service of a summons. SDs need not file an answer to the complaint in this action unless or until the Court expressly declines to enter this CD.

XXVII. FINAL JUDGMENT

102. This CD and its appendices constitute the final, complete, and exclusive agreement and understanding among the Parties regarding the settlement embodied in the CD.

The Parties acknowledge that there are no representations, agreements, or understandings relating to the settlement other than those expressly contained in this CD.

103. Upon entry of this CD by the Court, this CD shall constitute a final judgment between and among the United States and SDs. The Court finds that there is no just reason for delay and therefore enters this judgment as a final judgment under Fed. R. Civ. P. 54 and 58.

SO ORDERED THIS ____ DAY OF _____, 2017.

United States District Judge

Signature Page for Consent Decree regarding the Sauget Area 2 Superfund Site

FOR THE UNITED STATES OF AMERICA:

Date

JEFFREY H. WOOD
Acting Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

MICHAEL J. ZOELLER
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Washington, D.C. 20044-7611

DONALD S. BOYCE
United States Attorney
Southern District of Illinois
9 Executive Dr.
Fairview Heights, IL 62208

NATHAN D. STUMP
Assistant United States Attorney
Southern District of Illinois
9 Executive Dr.
Fairview Heights, IL 62208
nathan.stump@usdoj.gov

Signature Page for Consent Decree regarding the Sauget Area 2 Superfund Site

ROBERT KAPLAN
Acting Regional Administrator
U.S. Environmental Protection Agency
Region 5
77 West Jackson Blvd.
Chicago, IL 60604

THOMAS J. MARTIN
Associate Regional Counsel
U.S. Environmental Protection Agency
Region 5
77 West Jackson Blvd.
Chicago, IL 60604

Signature Page for Consent Decree regarding the Sauget Area 2 Superfund Site

FOR [SD]

Date

Name (print):

Title:

Address:

Agent Authorized to Accept Service
on Behalf of Above-signed Party:

Name (print):

Title:

Address:

Phone:

email:

U.S. EPA Small Business Resources Information Sheet

The United States Environmental Protection Agency provides an array of resources to help small businesses understand and comply with federal and state environmental laws. In addition to helping small businesses understand their environmental obligations and improve compliance, these resources will also help such businesses find cost-effective ways to comply through pollution prevention techniques and innovative technologies.

Office of Small and Disadvantaged Business Utilization (OSDBU)

www.epa.gov/aboutepa/about-office-small-and-disadvantaged-business-utilization-osdbu

EPA's OSDBU advocates and advances business, regulatory, and environmental compliance concerns of small and socio-economically disadvantaged businesses.

EPA's Asbestos Small Business Ombudsman (ASBO)

www.epa.gov/resources-small-businesses/asbestos-small-business-ombudsman or 1-800-368-5888

The EPA ASBO serves as a conduit for small businesses to access EPA and facilitates communications between the small business community and the Agency.

Small Business Environmental Assistance Program

<https://nationalsbeap.org>

This program provides a "one-stop shop" for small businesses and assistance providers seeking information on a wide range of environmental topics and state-specific environmental compliance assistance resources.

EPA's Compliance Assistance Homepage

www.epa.gov/compliance

This page is a gateway to industry and statute-specific environmental resources, from extensive web-based information to hotlines and compliance assistance specialists.

Compliance Assistance Centers

www.complianceassistance.net

EPA sponsored Compliance Assistance Centers provide information targeted to industries with many small businesses. They were developed in partnership with industry, universities and other federal and state agencies.

Agriculture

www.epa.gov/agriculture

Automotive Recycling

www.ecarcenter.org

Automotive Service and Repair

www.ccar-greenlink.org or 1-888-GRN-LINK

Chemical Manufacturing

www.chemalliance.org

Construction

www.cicacenter.org

Education

www.campuserc.org

Food Processing

www.fpeac.org

Healthcare

www.hercenter.org

Local Government

www.lgean.org

Surface Finishing

<http://www.sterc.org>

Paints and Coatings

www.paintcenter.org

Printing

www.pneac.org

Ports

www.portcompliance.org

Transportation

www.tercenter.org

U.S. Border Compliance and Import/Export Issues

www.bordercenter.org

EPA Hotlines and Clearinghouses

www.epa.gov/home/epa-hotlines

EPA sponsors many free hotlines and clearinghouses that provide convenient assistance regarding environmental requirements. Examples include:

Clean Air Technology Center (CATC) Info-line

www.epa.gov/calc or 1-919-541-0800

Superfund, TRI, EPCRA, RMP, and Oil Information Center

1-800-424-9346

EPA Imported Vehicles and Engines Public Helpline

www.epa.gov/otaq/imports or 1-734-214-4100

National Pesticide Information Center

www.npic.orst.edu or 1-800-858-7378

National Response Center Hotline to report oil and hazardous substance spills - <http://nrc.uscg.mil> or 1-800-424-8802

Pollution Prevention Information Clearinghouse (PPIC) -

www.epa.gov/p2/pollution-prevention-resources#ppic or 1-202-566-0799

Safe Drinking Water Hotline -

www.epa.gov/ground-water-and-drinking-water/safe-drinking-water-hotline or 1-800-426-4791

Toxic Substances Control Act (TSCA) Hotline

tsc hotline@epa.gov or 1-202-554-1404

Enclosure D

Small Entity Compliance Guides

<https://www.epa.gov/reg-flex/small-entity-compliance-guides>

EPA publishes a Small Entity Compliance Guide (SECG) for every rule for which the Agency has prepared a final regulatory flexibility analysis, in accordance with Section 604 of the Regulatory Flexibility Act (RFA).

Regional Small Business Liaisons

www.epa.gov/resources-small-businesses/epa-regional-office-small-business-liaisons

The U.S. Environmental Protection Agency (EPA) Regional Small Business Liaison (RSBL) is the primary regional contact and often the expert on small business assistance, advocacy, and outreach. The RSBL is the regional voice for the EPA Asbestos and Small Business Ombudsman (ASBO).

State Resource Locators

www.envcap.org/statetools

The Locators provide state-specific contacts, regulations and resources covering the major environmental laws.

State Small Business Environmental Assistance Programs (SBEAPs)

<https://nationalsbeap.org/states/list>

State SBEAPs help small businesses and assistance providers understand environmental requirements and sustainable business practices through workshops, trainings and site visits.

EPA's Tribal Portal

www.epa.gov/tribalportal

The Portal helps users locate tribal-related information within EPA and other federal agencies.

EPA Compliance Incentives

EPA provides incentives for environmental compliance. By participating in compliance assistance programs or voluntarily disclosing and promptly correcting violations before an enforcement action has been initiated, businesses may be eligible for penalty waivers or reductions. EPA has two such policies that may apply to small businesses:

EPA's Small Business Compliance Policy

www.epa.gov/enforcement/small-businesses-and-enforcement

EPA's Audit Policy

www.epa.gov/compliance/epas-audit-policy

Commenting on Federal Enforcement Actions and Compliance Activities

The Small Business Regulatory Enforcement Fairness Act (SBREFA) established a SBREFA Ombudsman and 10 Regional Fairness Boards to receive comments from small businesses about federal agency enforcement actions. If you believe that you fall within the Small Business Administration's definition of a small business (based on your North American Industry Classification System designation, number of employees or annual receipts, as defined at 13 C.F.R. 121.201; in most cases, this means a business with 500 or fewer employees), and wish to comment on federal enforcement and compliance activities, call the SBREFA Ombudsman's toll-free number at 1-888-REG-FAIR (1-888-734-3247).

Every small business that is the subject of an enforcement or compliance action is entitled to comment on the Agency's actions without fear of retaliation. EPA employees are prohibited from using enforcement or any other means of retaliation against any member of the regulated community in response to comments made under SBREFA.

Your Duty to Comply

If you receive compliance assistance or submit a comment to the SBREFA Ombudsman or Regional Fairness Boards, you still have the duty to comply with the law, including providing timely responses to EPA information requests, administrative or civil complaints, other enforcement actions or communications. The assistance information and comment processes do not give you any new rights or defenses in any enforcement action. These processes also do not affect EPA's obligation to protect public health or the environment under any of the environmental statutes it enforces, including the right to take emergency remedial or emergency response actions when appropriate. Those decisions will be based on the facts in each situation. The SBREFA Ombudsman and Fairness Boards do not participate in resolving EPA's enforcement actions. Also, remember that to preserve your rights, you need to comply with all rules governing the enforcement process.

EPA is disseminating this information to you without making a determination that your business or organization is a small business as defined by Section 222 of the Small Business Regulatory Enforcement Fairness Act or related provisions.